CANCER GENETICS, INC
Form 424B5
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PROSPECTUS SUPPLEMENT
(To Prospectus Dated June 5, 2014)

CANCER GENETICS, INC.

Up to $20,000,000
Common Stock

We have entered into a Controlled Equity Offering℠ sales agreement (the "Sales Agreement") with Cantor Fitzgerald & Co. ("Cantor Fitzgerald") relating to shares of common stock offered by this prospectus supplement. In accordance with the terms of the Sales Agreement, we may offer and sell up to $20,000,000 of our common stock from time to time through Cantor Fitzgerald, acting as sales agent.

Our common stock is traded on The NASDAQ Capital Market under the symbol "CGIX." The last reported sale price of our common stock on The NASDAQ Capital Market on July 14, 2015 was $12.30 per share.

Sales of our common stock, if any, under this prospectus supplement may be made in sales deemed to be "at-the-market" equity offerings as defined in Rule 415 promulgated under the Securities Act of 1933, as amended (the "Securities Act"), including sales made directly on or through The NASDAQ Capital Market, the existing trading market for our common stock, sales made to or through a market maker other than on an exchange or otherwise, in negotiated transactions at market prices prevailing at the time of sale or at prices related to such prevailing market prices, and/or, with our prior consent, any other method permitted by law, including in privately negotiated transactions. Subject to the terms of the Sales Agreement, Cantor Fitzgerald will act as sales agent and use commercially reasonable efforts to sell on our behalf all of the shares of common stock requested to be sold by us, consistent with its normal trading and sales practices, on mutually agreed terms between Cantor Fitzgerald and us. There is no arrangement for funds to be received in any escrow, trust or similar arrangement.

Cantor Fitzgerald will be entitled to compensation at a commission rate of 3.0% of the gross sales price per share sold. In connection with the sale of our common stock on our behalf, Cantor Fitzgerald will be deemed to be an "underwriter" within the meaning of the Securities Act and the compensation of Cantor Fitzgerald will be deemed to be underwriting commissions or discounts. We have also agreed to provide indemnification and contribution to Cantor Fitzgerald with respect to certain liabilities, including liabilities under the Securities Act or the Exchange Act of 1934, as amended (the "Exchange Act").

Investing in our common stock involves risks. Before making an investment decision, you should review and carefully consider all of the information set forth in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference in this prospectus supplement. See "Risk Factors" beginning on page S-12 of this prospectus supplement, page 3 of the accompanying prospectus and under similar headings in the other documents that are incorporated by reference into this prospectus supplement and the accompanying prospectus.

Neither the Securities and Exchange Commission (the "SEC") nor any state securities commission has approved or disapproved of these securities or determined if this prospectus supplement or the accompanying prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus supplement is July 15, 2015.

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Prospectus Supplement

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ABOUT THIS PROSPECTUS SUPPLEMENT

In this prospectus supplement, "Cancer Genetics," "we," "us," "our" or "ours" refer to Cancer Genetics, Inc. and its consolidated subsidiaries.

This prospectus supplement and the accompanying prospectus relate to the offering of shares of our common stock. Before buying any of the shares of common stock offered hereby, we urge you to carefully read this prospectus supplement and the accompanying prospectus, together with the information incorporated herein by reference as described under the headings "Where You Can Find More Information" and "Incorporation of Documents by Reference." These documents contain important information that you should consider when making your investment decision. This prospectus supplement contains information about the common stock offered hereby and may add, update or change information in the accompanying prospectus.

You should rely only on the information that we have provided or incorporated by reference in this prospectus supplement and the accompanying prospectus. No dealer, salesperson or other person is authorized to give any information or to represent anything not contained in or incorporated by reference into this prospectus supplement or the accompanying prospectus. You must not rely on any unauthorized information or representation. If anyone provides you with different or inconsistent information, you should not rely on it.

We are not making offers to sell or solicitations to buy our common stock in any jurisdiction in which an offer or solicitation is not authorized or in which the person making that offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make an offer or solicitation. You should assume that the information in this prospectus supplement and the accompanying prospectus or any related free writing prospectus is accurate only as of the date on the front of the document and that any information that we have incorporated by reference is accurate only as of the date of the document incorporated by reference, regardless of the time of delivery of this prospectus supplement, the accompanying prospectus or any related free writing prospectus, or any sale of a security.

This document is in two parts. The first part is this prospectus supplement, which adds to and updates information contained in the accompanying prospectus. The second part, the prospectus, provides more general information, some of which may not apply to this offering. Generally, when we refer to this prospectus, we are referring to both parts of this document combined. To the extent there is a conflict between the information contained in this prospectus supplement and the information contained in the accompanying prospectus, you should rely on the information in this prospectus supplement.

This prospectus supplement and the accompanying prospectus contain summaries of certain provisions contained in some of the documents described herein, but reference is made to the actual documents for complete information. All of the summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been or will be filed as exhibits to the registration statement of which this prospectus is a part or as exhibits to documents incorporated by reference herein, and you may obtain copies of those documents as described below under the headings "Where You Can Find More Information" and "Incorporation of Documents by Reference."

Trademarks and Trade Names

This prospectus supplement contains references to our trademarks and to trademarks belonging to other entities. Solely for convenience, trademarks and trade names referred to in this prospectus supplement, including logos, artwork and other visual displays, may appear without the ® or TM symbols, but such references are not intended to indicate, in any way, that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto. We do not intend our use or display of other companies' trade names or trademarks to imply a relationship with, or endorsement or sponsorship of us by, any other companies.

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PROSPECTUS SUPPLEMENT SUMMARY

The following summary of our business highlights some of the information contained elsewhere in or incorporated by reference into this prospectus supplement. Because this is only a summary, however, it does not contain all of the information that may be important to you. You should carefully read this prospectus supplement and the accompanying prospectus, including the documents incorporated by reference, which are described under "Where You Can Find More Information" and "Incorporation of Documents by Reference" in this prospectus supplement. You should also carefully consider the matters discussed in the section titled "Risk Factors" in this prospectus supplement and in the accompanying prospectus and in other periodic reports incorporated by reference herein.

Overview

We are an oncology diagnostics company focused on developing, commercializing and providing DNA-based tests and services to improve the personalization of cancer treatment and to better inform biopharmaceutical companies of genomic factors influencing subject responses to therapeutics. Our vision is to become the oncology diagnostics partner for companies and clinicians by participating in the entire care continuum from bench to bedside. We believe the diagnostic industry is undergoing a metamorphosis in its approach to oncology testing, embracing individualized medicine as a means to drive higher standards of patient treatment and disease management. Similarly, biopharmaceutical companies are increasingly engaging companies such as ours to provide information on clinical trial participants' DNA profiles in order to identify genomic variations that may be responsible for differing responses to pharmaceuticals, and particularly to oncology drugs, thereby increasing the efficiency of trials while lowering related costs. We believe tailored therapeutics can revolutionize oncology medicine through DNA-based testing services, enabling physicians and researchers to target the factors that make each patient and disease unique. We have created a unique position in the industry by providing targeted somatic analysis of tumor sample cells alongside germline analysis of an individual's non-cancerous cells' DNA as we attempt to reach the next milestone in personalized medicine.

Cancer is genetically-driven and constitutes a heterogeneous class of diseases characterized by uncontrollable cell growth. Many cancers are becoming increasingly understood at a molecular level and it is possible to attribute specific cancers to identifiable genetic changes in unhealthy cells. Cancer cells contain modified genetic material compared to normal human cells. Common genetic abnormalities correlated to cancer include gains or losses of genetic material on specific chromosomal regions (loci) or changes in specific genes (mutations) that ultimately result in detrimental cellular changes followed by cancerous or pre-cancerous conditions. Understanding the differences in these genomic changes helps clinicians to identify and stratify different forms of cancer in order to optimize patient treatment and patient management. Therefore, understanding and analysis of cancer at the molecular level is not only useful for diagnostic purposes, but we also believe it can play an important role in prognosis and disease management. We believe technology that can apply predictive information has the potential to dramatically improve treatment outcomes for patients fighting against cancer. Our molecular diagnostic tests for cancer aim to remove subjectivity from the diagnostic phase, and add prognostic information, thus enabling personalized treatments based on cancer analysis at its most basic genetic level.

Our business is based on demand for DNA-based diagnostic services from three main sectors, including cancer centers and hospitals, biotechnology and biopharmaceutical companies, and the research community. Clinicians and oncologists in cancer centers and hospitals seek genomic-based testing since these methods produce higher value and more accurate cancer diagnostic information than traditional analytical methods. Our unique and focused tests aim to provide actionable information that can guide patient management decisions, potentially resulting in decreased costs for cancer centers and hospitals while streamlining therapy selection. Our services are also sought by biotechnology and biopharmaceutical companies engaged in designing and running clinical trials for their value and

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efficacy in oncology treatments and therapeutics. We believe trial participants' likelihood of experiencing either favorable or adverse responses to the trial treatment can be determined by genomic testing, increasing trial efficiency, subject safety and trial success rates. Our services are also sought by researchers and research groups seeking to identify genomic based biomarkers and panels and develop methods for diagnostic technologies and tests for disease. We aggressively pursue the strategy of trying to demonstrate increased value and efficacy with payors who are trying to contain costs and academic collaborators seeking to develop new insights and cures.

Our market strategy is organized to align with the three aforementioned industry segments. We utilize relatively the same technologies across each of these businesses to deliver results-oriented information important to cancer treatment and patient management. Our tests address the limitations of traditional cancer diagnostic approaches, including reliance on human inspection of specimens and interpretation of clinical measurements, and inter-institutional variability. Our suite of clinical and biopharma services remove subjectivity from diagnoses and additionally provide information on treatment selection that cannot be obtained from anatomic pathology and staining techniques alone. We believe the level of personalized treatment required to optimize a patient's treatment regimen and to maximize clinical trial success rates is only possible through the use of DNA-based molecular diagnostics.

The following table lists our market strategy by customer category:

Customer Category	Types of Customers	Nature of Services
Clinical Services	Hospitals Cancer Centers Clinics	Clinical services provide information on diagnosis, prognosis and theranosis of cancers to guide patient management.
Biopharma Services	Biopharma and Biotech companies performing clinical trials	Biopharma services provide companies customized solutions for patient stratification and treatment selection through an extensive suite of DNA-based testing services.
Discovery Services	Biopharma and Biotech companies Researchers	Discovery services provide the tools and testing methods for companies and researchers seeking to identify new DNA-based biomarkers for disease.

In 2014, we generated approximately 55% of our revenue from Biopharma Services, approximately 43% from Clinical Services and approximately 2% from Discovery Services, a new line of service launched in 2014. In 2013, we generated approximately 55% of our revenue from Clinical Services, approximately 40% from Biopharma Services and approximately 5% from government grants. During 2014 we had no government grants.

We utilize relatively the same proprietary and nonproprietary molecular diagnostic tests and technologies across our clinical services, biopharma services and discovery services businesses to deliver results-oriented information important to cancer treatment and patient management. The non-proprietary testing services we offer are focused in part on specific oncology categories where we are developing our proprietary tests. We believe that there is significant synergy in developing and marketing a complete set of tests and services that are disease focused and delivering those tests and services in a comprehensive manner to help with treatment decisions. The insight that we develop in delivering non-proprietary services are often leveraged in the development of our proprietary programs and now increasingly in the validation of our proprietary programs, such as MatBA and Focus::NGS.

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Clinical Services

Our clinical offerings include our portfolio of proprietary tests targeting hematological, urogenital and HPV-associated cancers, in conjunction with ancillary non-proprietary tests. Our proprietary tests target cancers that are difficult to prognose and predict treatment outcomes through currently available mainstream techniques. We provide our proprietary tests and services, along with a comprehensive range of non-proprietary oncology-focused tests and laboratory services, to oncologists and pathologists at hospitals, cancer centers, and physician offices. Our proprietary tests are based principally on our expertise in specific cancer types, test development methodologies and proprietary algorithms correlating genetic events with disease specific information. Our portfolio primarily includes comparative genomic hybridization (CGH) microarrays and next generation sequencing (NGS) panels, and DNA fluorescent *in situ* hybridization (FISH) probes.

Our comprehensive oncology-focused testing services for cancer are utilized in the diagnosis, prognosis and predicting treatment outcomes (theranosis) of cancer patients and are growing rapidly as clinicians demand more precise and more comprehensive diagnostic evaluation of their patients. We utilize highly skilled scientists, pathologists and hematologists in our laboratory, with 35% of individuals holding advanced degrees. These individuals assist our customers in integrating and technically assessing the testing results for their patients.

We believe that we can be successful by offering cancer professionals a fully-integrated menu of oncology-focused proprietary tests and customizable laboratory services. We believe that our proprietary tests provide superior diagnostic and prognostic values than other currently available tests and services. We believe our ability to rapidly translate research insights about the genetics and molecular mechanisms of cancer into the clinical setting will improve patient treatment and management and that this approach can become a key component in the standard of care for personalized cancer treatment.

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We currently offer a range of proprietary and non-proprietary services in the following areas:

Testing Category	Nature of Test
Proprietary Microarray based testing (MatBA-CLL, MatBA-SLL, MatBA-DLBCL, MatBA-MCL and UroGenRA-Kidney)	Our proprietary microarray tests for the detection of chromosomal abnormalities observed in Chronic Lymphocytic Leukemia (CLL), Small Lymphocytic Lymphoma (SLL), Diffuse Large B-Cell Lymphoma (DLBCL), Mantle Cell Lymphoma (MCL) and kidney cancer.
Proprietary Next Generation Sequencing testing (Focus::CLL, Focus::Myeloma, Focus::Lymphoma	Our proprietary NGS tests for the diagnosis and prognosis of genomic alterations in CLL, Myeloma, and B-Cell Non-Hodgkin's Lymphomas.
Molecular Testing	Using quantitative methods, such as polymerase chain reaction, sequencing and mutation analysis, to analyze DNA and RNA to follow progression of disease and response to therapy at the genetic level.
Cytogenetics Testing	A series of methods that analyze human chromosomes in order to identify malignancy.
FISH Testing	Analysis of abnormalities at the chromosomal and gene levels using analyte specific reagents and FED-cleared probes performed on whole specimen or separated purified plasma cells.
Histology Testing	Microscopic examination of stained tissue sections using various special staining techniques.
Cytology Testing	Non-gynecological fluid preparation for microscopic evaluations by a pathologist.
IHC Testing	Analysis of the distribution of tumor antigens in specific cell and tissue types.

Our clinical services strategy is focused on direct sales to oncologists and pathologists at hospitals, cancer centers, and physician offices in the United States, and expanding our relationships with leading distributors and medical facilities in emerging markets. In addition, we intend to continue to focus on partnering with community hospitals, where nearly 85% of all cancers are initially diagnosed, through our program called Expand Dx, which was specifically designed to meet the needs of community hospitals. We believe our proprietary tests and services will enable community hospitals to optimize and expand their oncology services to better serve their cancer patients and reduce costs associated with cancer care.

We have developed the Summation Report which, we believe, provides an integrated view of a patient's test results and diagnosis in a user-friendly, visually appealing format for clinicians. Our hematopathologists and laboratory directors prepare these Summation Reports based on the clinical information and diagnosis provided by our laboratory professionals. All our testing technologies are

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integrated into a Summation Report to allow oncologists to efficiently arrive at a definitive diagnosis and drive complete and effective decisions.

Our principal clinical services leverage and utilize our proprietary tests and testing methods, which include the categories below:

NGS Panels

Next-Generation Sequencing performs massively parallel sequencing (over 100 reads of a selected segment of DNA in one test run) of DNA from cancer cells effectively permitting a highly sensitive analysis of not only the sequence of the genome in cancer cells to reveal mutations and other aberrations associated with a cancer, but also other genomic rearrangements previously unknown to occur in the cancer genome. Translation of these findings for clinical implementation can also be achieved with a high degree of sensitivity using deep sequencing at specific nucleotide sequences and can be translated where applicable into FISH or microarray-based assays depending on the aberrations that need to be detected, to develop more specific tests. Deep sequencing is a technique by which a selected segment of nucleotides is sequenced repeatedly in order to reveal potentially rare genetic changes that may not be discoverable by traditional sequencing methods.

CGH Microarrays

Oligonucleotide-based CGH microarrays are a multiplex technology that allows the attachment of thousands of microscopic spots of DNA onto a surface. The DNA sequences on the microarray can hybridize to multiple genetic aberrations in cancerous tissue and can yield diagnostic and prognostic information of importance to the treatment of the patient from a small amount of patient sample. We believe microarrays provide a powerful approach to distinguishing cancer types and differentiate those more or less likely to recur, progress or respond to specific treatments based upon comprehensive sequence analysis and the ability of one microarray to interrogate multiple cancer subtypes in parallel. Because thousands of individual DNA sequences are being tested by the microarray, analysis involves bioinformatics-based algorithms. Considering the current clinical and societal demand for minimally invasive procedures, we believe the diagnostic and prognostic applications of microarrays are highly desirable.

Complete Program

Our Complete program is our branded program offering a unique suite of common and proprietary tests that assist clinicians in determining the best treatment options to improve patient outcomes. Each Complete program integrates the latest diagnostic and prognostic biomarkers across multiple testing methodologies. We offer Complete testing for a number of hematological cancers and solid tumors, including CLL/SLL, DLBCL, MCL, myeloproliferative neoplasms (MPN), colorectal, lung and breast cancers.

DNA Probes

FISH-based DNA probes are fluorescently labeled sequences of DNA complementary to a genomic region of interest, which when hybridized to chromosomes, give rise to signals revealing with high sensitivity the presence or absence of a specific genomic abnormality. One probe identifies one specific genomic region. To create higher levels of specificity, multiple probes may be required to identify multiple genomic aberrations in the same cancer cell. Depending on the color scheme and custom design of each FISH-based DNA probe, genomic gain/loss and rearrangements can be detected in cancer specimens of multiple tissue types. Our proprietary FHACT (FISH-based HPV-associated Cancer Test) probe panel for detection and prognostication of HPV-associated cervical cancer and

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precancerous lesions uses a patented four-probe set to differentiate between cervical lesions likely to progress to cancer and those likely to regress without intervention.

We offer these tests and expect to offer additional proprietary tests as laboratory developed tests, or LDTs, in other areas of oncology and will seek the required certification under the Clinical Laboratory Improvement Amendments of 1988 ("CLIA") and state approvals, as well as any U.S. Food and Drug Administration ("FDA") clearances or approvals that may be required for these tests.

Biopharma Services

Biopharma services include laboratory and testing services performed for biopharmaceutical companies engaged in clinical trials. Our biopharma services focus on providing pharmaceutical companies with oncology specific and non-oncology genetic testing services for phase I-III trials along with ancillary services including biorepository and trials logistics support. These services include DNA and RNA extraction and purification, genotyping, gene expression analyses and biorepository sample storage solutions.

Industry research has shown many promising drugs have produced disappointing results in clinical trials. For example, a study by Princess Margaret Hospital in Toronto estimated that 85% of the phase III trials testing new therapies for solid tumors studied over a five-year period failed to meet their primary endpoint. Given such a high failure rate of oncology drugs, combined with constrained budgets for biopharmaceutical companies, there is a significant need for drug developers to utilize molecular diagnostics to decrease these failure rates. For specific molecular-targeted therapeutics, the identification of appropriate biomarkers potentially may help to optimize clinical trial patient selection and increase trial success rates by helping clinicians identify patients that are most likely to benefit from a therapy based on their individual genomic profile.

Our Select One offering was created specifically to help the biopharmaceutical community with clinical trials and companion diagnostic development in areas of our core expertise. Oncology drugs have the potential to be among the most personalized of therapeutics, and yet oncology trials have one of the worst approval success rates, hovering at approximately 10%. In an effort to improve the outcome of these trials, and more rapidly advanced targeted therapeutics, the biotechnology and pharmaceutical community is increasingly looking to companies that have both proprietary disease insights and comprehensive testing services as they move toward biomarker-based therapeutics.

In June 2015, the United States National Institutes of Health reported over 74,000 clinical trials were currently being conducted in the United States, and over 14,000 of these trials were actively recruiting participants for studies with oncology pharmaceuticals or biologics. Genomic testing services have been altering the clinical trials landscape by providing biopharmaceutical companies with information about trial subjects' genetic profiles that may be able to inform researchers whether or not a subject will benefit from the trial drug or will experience adverse effects. Streamlined subject selection and stratification, and tailored therapies selected to maximally benefit each group of subjects may increase the number of trials that result in approved therapies and make conducting clinical trials more efficient and less costly for biopharmaceutical companies. In 2014, 41 new drugs were approved by the FDA. This is the highest number of FDA approvals since 1996, and 20% of these drugs were personalized medicines, highlighting the potential value of incorporating genomic information into clinical trial design.

In addition to the tests and services provided to biopharmaceutical companies, we are developing NGS panels focused on pharmacogenomics and oncology that will inform researchers of trial subjects' drug sensitivities.

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We provide the following services to biopharmaceutical companies and researchers conducting clinical trials:

Genotyping and Pharmacogenomics Testing Services

Over 400 genotyping assays including drug metabolizing enzymes, transporters and receptors.

Over 30 validated gene expression assays.

Testing for the FDA's Pharmacogenomic (PGx) Biomarkers in Drug Labels recommended panel.

Loss of heterozygosity and copy number detection assays.

We also utilize our laboratories to provide clinical trial services to biopharmaceutical companies and clinical research organizations to improve the efficiency and economic viability of clinical trials. Our clinical trials services leverage our knowledge of clinical oncology and molecular diagnostics and our laboratory's fully integrated capabilities. Our Select One program integrates clinical information into the drug discovery process in order to provide customized solutions for patient stratification and treatment. By utilizing biomarkers, we intend to optimize the clinical trial patient selection. This may result in an improved success rate of the clinical trial and may eventually help biopharmaceutical companies to select patients that are most likely to benefit from a therapy based on their genetic profile. We believe we are one of only a few laboratories with the capability to combine somatic and germline mutational analyses in clinical trials.

Our Select One clinical trial services are aimed at developing customizable tests and techniques utilizing our proprietary tests and laboratory services to provide enhanced genetic signature and more comprehensive understanding of complex diseases at earlier stages. We leverage our knowledge of clinical oncology and molecular diagnostics and provide access to our genomic database and assay development capabilities for the development and validation of companion diagnostics. This potentially enables companies to reduce the costs associated with development by determining earlier in the development process if they should proceed with additional clinical studies. We have been chosen by Gilead Sciences Inc. to provide clinical trial services and molecular profiling of CLL patients. We believe our clinical trial services may allow Gilead and others to improve patient responder selection, thereby potentially increasing the likelihood our customer's product is approved by FDA. Additionally, through our services we gain further insights into disease progression and the latest drug development that we can incorporate into our proprietary tests and services.

We also provide genetic testing for drug metabolism to aid biopharmaceutical companies in identifying subjects' likely responses to treatment, allowing these companies to conduct more efficient and safer clinical trials. We believe pharmacogenomics drug metabolism testing helps deliver the promise of personalized medicine by enabling researchers to tailor therapies in development to differences in patients' genomic profiles.

Discovery Services

Our discovery services provide the tools and testing methods for companies and researchers seeking to identify new DNA-based biomarkers for disease. In 2014, we added discovery services as a new revenue category and for the year ended December 31, 2014 this category accounted for approximately 2% of our total revenue. Discovery services we offer include validation of biomarkers for diseases including cancers, from which tests for diagnosis or prognosis may be established. We also provide consulting, guidance and preparation of samples and clinical trial design. We believe the ability to analyze variations in DNA and interpret these changes into meaningful predictors of disease or indicators of diagnosis is essential to discovering new biomarkers for cancer and targets for therapies.

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Our Laboratory Facilities

Rutherford, New Jersey, United States

Our Rutherford location is a 17,900 square foot facility and also serves as our corporate headquarters. We offer our clinical services, biopharma services and discovery services out of our Rutherford location. This location has been accredited by the College of American Pathologists, or CAP, which is an approved accreditation entity under CLIA, to perform high complexity testing. CLIA certification and accreditation are required before any laboratory may perform clinical testing on human samples for the purpose of diagnosis, prevention, treatment of disease or assessment of health. Our Rutherford location is licensed by the appropriate state departments of health and able to receive and test patient samples from all 50 states, as well as from oversees locations. Additionally, our Rutherford laboratory is self-certified under the US-EU and US-Swiss Safe Harbor Frameworks governing use of personal information received on patients or clinical trial participants from the European Union. Our Rutherford laboratory also holds the requisite licenses from the New Jersey State Department of Health to operate and perform clinical testing on patient samples. In addition, certain states, such as New York, require out-of-state laboratories to obtain licenses in order to accept patient specimens from such states. Our Rutherford location holds clinical laboratory licenses from the New York Department of Health, Florida Department of Health, Maryland Department of Health, Pennsylvania Department of Health, and California Department of Health for all of our clinical departments.

Morrisville, North Carolina, United States

We offer our biopharma services, including biopharmaceutical trials testing services, pharmacogenomics testing, and sample storage and biorepository services from our 25,000 square foot facility located in Research Triangle Park, Morrisville, North Carolina. Our facility in Morrisville is CLIA-certified and subject to Good Laboratory Practices ("GLP") requirements, and has received accreditation by CAP for its industry-leading biorepository capabilities. We do not believe that our Morrisville laboratory requires individual state licensure since it is not performing clinical testing on patient samples and is only involved in clinical trials testing. Our Morrisville laboratory is also self-certified under US-European and US-Swiss Safe Harbor frameworks.

Hyderabad, India and Shanghai, China

We also have two laboratories operating outside of the United States: one in Hyderabad, India and one in Shanghai, China. Our 10,000 square foot Hyderabad facility services government entities, academic institutions, and health and cancer centers. It is a Department of Scientific and Industrial Research ("DSIR") recognized laboratory and is ISO9001-2008 and National Accreditation Board for Testing and Calibration Laboratories ("NABL") certified. Our 2,700 square foot Shanghai facility is both CLIA-certified and subject to GLPs, and provides biopharma services to companies performing clinical trials in China.

Recent Developments

The Company is currently compiling its financial results for the three months ended June 30, 2015, and such financial information is not yet available. However, management's preliminary estimate of use of cash, or cash burn, for the three months ended June 30, 2015 indicates a burn of approximately $4.8 million in the quarter. This amount is approximately $1.3 million more that the Company's average cash burn and is predominately due to the timing of the payment of premiums for the Company's annual business insurance renewal and payments of employee bonuses accrued in the year ended December 31, 2014.

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The estimates above are preliminary and may change. We have not completed the preparation of our quarterly financial statements for the quarter ended June 30, 2015, we and our auditors have not completed our normal quarterly review procedures for the quarter, and there can be no assurances that our final results for this quarter will not differ from these estimates, which changes could be material. These estimates should not be viewed as a substitute for full interim financial statements prepared in accordance with GAAP or as a measure of our performance.

Corporate Information

We were incorporated in the State of Delaware on April 8, 1999. On July 16, 2014, we purchased substantially all of the assets of Gentris Corporation, or Gentris, a laboratory specializing in pharmacogenomics profiling for therapeutic development, companion diagnostics and clinical trials. On August 18, 2014, we entered into two agreements by which we acquired BioServe Biotechnologies (India) Pvt. Ltd., or BioServe, a premier genomics services provider serving both the research and clinical markets in India, and as a result of the acquisition, BioServe became a subsidiary of ours.

Our principal executive offices are located at 201 Route 17 North, 2nd Floor, Rutherford, New Jersey 07070. Our telephone number is (201) 528-9200 and our corporate website address is *www.cancergenetics.com*. The information on our website is not part of, and is not incorporated by reference into, this prospectus supplement and the accompanying prospectus.

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THE OFFERING

Common stock offered by us	Shares of our common stock having an aggregate offering price of up to $20,000,000.
Common stock to be outstanding immediately after this offering(1)	Up to 11,457,185 shares (as more fully described in footnote (1) below), assuming sales of 1,626,016 shares of our common stock in this offering at an offering price of $12.30 per share, which was the last reported sale price of our common stock on The NASDAQ Capital Market on July 14, 2015. The actual number of shares issued will vary depending on the sales price under this offering.
Manner of offering	"At-the-market" offering that may be made from time to time through our sales agent, Cantor Fitzgerald. See "Plan of Distribution" on page S-35.
Use of Proceeds	We currently intend to use the net proceeds received from this offering, if any, to fund our anticipated contributions to our joint venture with Mayo, expansion of our sales and marketing capabilities, further research and development activities, expansion of business, strategic transactions and working capital and other general corporate purposes. See "Use of Proceeds" on page S-31.
NASDAQ Capital Market symbol	CGIX
Risk Factors	Investing in our common stock involves risks. Please refer to the sections titled "Risk Factors" beginning on page S-12 of this prospectus supplement, as well as the risks and uncertainties discussed under the section titled "Risk Factors" in our most recent Annual Report on Form 10-K and any subsequent Quarterly Reports on Form 10-Q or Current Reports on Form 8-K; "Special Note Regarding Forward-Looking Statements" on page S-29 of this prospectus supplement, and other information included or incorporated by reference in this prospectus supplement and the accompanying prospectus for a discussion of factors you should carefully consider before investing our securities.

(1) The number of shares of common stock to be outstanding after this offering is based on 9,831,169 shares of common stock outstanding as of March 31, 2015, which does not include the following, all as of March 31, 2015:

- 1,888,375 shares issuable upon the exercise of outstanding stock options with a weighted-average exercise price of $10.50 per share;
- 1,136,078 shares issuable upon the exercise of outstanding warrants with a weighted-average exercise price of $13.47 per share;
- 323,267 shares available for future issuance under the 2011 Equity Incentive Plan, or the 2011 Plan, and the 2008 Stock Option Plan, or 2008 Plan; and
- 650,000 shares that became available for future issuance under the 2011 Plan upon approval by our stockholders on May 14, 2015 at our annual meeting.

Unless otherwise stated, all information in this prospectus supplement assumes no exercise of outstanding options or warrants to purchase common stock and no issuance of shares available for future issuance under our equity compensation plans.

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RISK FACTORS

An investment in our company involves a number of risks. Before you make a decision to invest in our common stock, you should consider carefully the risks described below, as well as the risks described in or incorporated by reference in this prospectus supplement and the accompanying prospectus, including the risks and uncertainties discussed under the section titled "Risk Factors" in our most recent Annual Report on Form 10-K and any subsequent Quarterly Reports on Form 10-Q or Current Reports on Form 8-K, and all other documents incorporated by reference into this prospectus supplement and accompanying prospectus, as updated by our subsequent filings under the Exchange Act.

In addition, our business is subject to significant regulation and is greatly dependent on our ability to protect our proprietary discoveries and technologies. The risks described below under the captions "Regulatory Risks Relating to Our Business" and "Intellectual Property Risks Related to Our Business" supplement and provide certain updates to certain of the regulatory and intellectual property related risks set forth under the captions "Regulatory Risks Relating to Our Business" and "Intellectual Property Risks Related to Our Business," respectively, in our Annual Report on Form 10-K for the fiscal year ended December 31, 2014. The risk factor updates set forth below should be read in conjunction with the risk factors set forth in our most recent Form 10-K under the caption "Item 1A. Risk Factors," as may be updated from time to time by subsequent filings under the Securities Exchange Act of 1934, as amended.

Any of these risks could have a material adverse effect on our business, prospects, financial condition and results of operations. In any such case, the trading price of our securities could decline and you could lose all or part of your investment. Additional risks not presently known to us or that we currently deem immaterial may also adversely affect our business operations. The risks discussed below also include forward-looking statements and our actual results may differ substantially from those discussed in these forward-looking statements. See "Special Note Regarding Forward-Looking Statements."

Risks Related to This Offering

Management will have broad discretion as to the use of the proceeds from this offering, and we may not use the proceeds effectively.

We currently intend to use the net proceeds received by us in this offering to fund contributions to our joint venture with Mayo, expansion of our sales and marketing capabilities, further research and development activities, expansion of business, strategic transactions and working capital and other general corporate purposes. However, our management will have broad discretion as to the application of the net proceeds from this offering and could use them for purposes other than those currently contemplated. Our management may use the net proceeds for corporate purposes that may not improve our financial condition or market value.

The vast majority of common shares offered under this prospectus supplement and the accompanying prospectus will be sold in "at-the-market" offerings, and investors who buy shares at different times will likely pay different prices.

Investors who purchase shares under this prospectus supplement and the accompanying prospectus at different times will likely pay different prices, and so may experience different outcomes in their investment results. We will have discretion, subject to market demand, to vary the timing, prices, and numbers of shares sold, and there is no minimum or maximum sales price. Investors may experience declines in the value of their shares as a result of share sales made at prices lower than the prices they paid.

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You will experience immediate and substantial dilution in the net tangible book value per share of the common stock you purchase. In addition, we may issue additional equity or convertible securities in the future, which may result in additional dilution to investors.

Since the price per share of our common stock being offered is substantially higher than the net tangible book value per share of our common stock, you will suffer substantial dilution in the net tangible book value of the common stock you purchase in this offering. Based on an assumed offering price of $12.30 per share (which was the last reported sale price of a share of our common stock on The NASDAQ Capital Market on July 14, 2015), if you purchase shares of common stock in this offering, you will suffer immediate and substantial dilution of approximately $8.27 per share in the net tangible book value of the common stock. See the section titled "Dilution" in this prospectus supplement for a more detailed discussion of the dilution you will incur if you purchase common stock in this offering. In addition, we have a significant number of stock options and restricted stock outstanding. If the holders of these securities exercise them or become vested in them, as applicable, you may incur further dilution.

Furthermore, to the extent we need to raise additional capital in the future and we issue additional shares of common stock or securities convertible or exchangeable for our common stock, our then-existing stockholders may experience dilution and the new securities may have rights senior to those of our common stock offered in this offering.

Resales of our common stock in the public market following the offering may cause its market price to fall.

We will issue common stock from time to time in connection with this offering. This issuance from time to time of these new shares of our common stock, or our ability to issue these shares of common stock in this offering, could result in resales of our common stock by our current stockholders concerned about the potential dilution of their holdings. If our stockholders sell substantial amounts of our common stock in the public market following this offering, the market price of our common stock could fall.

There has been a limited trading market for our common stock.

We only relatively recently received approval to list our common stock on The NASDAQ Capital Market. Prior to August 2013, our common stock had been quoted on the OTCQB, and prior to our initial public offering in April 2013, there was no trading activity in our common stock. Although the NASDAQ listing improved the liquidity of our common stock, such listing has been of limited duration and no assurance can be given that recent levels of trading activity will continue. A lack of an active market may impair the ability of our stockholders to sell shares at the time they wish to sell them or at a price that they consider reasonable. The lack of an active market may also reduce the fair market value of our shares. An inactive market may also impair our ability to raise capital by selling shares of capital stock and may impair our ability to acquire other companies or technologies by using our common stock as consideration.

The price of our common stock may be volatile, and the market price of our common stock may decrease.

Our stock price per share may vary from time to time. Even if an active market for our stock continues, our stock price nevertheless may be volatile. Market prices for securities of early-stage life sciences companies have historically been particularly volatile. The factors that may cause the market price of our common stock to fluctuate include, but are not limited to:

- progress, or lack of progress, in developing and commercializing our proprietary tests;
- favorable or unfavorable decisions about our tests or services from government regulators, insurance companies or other third-party payors;

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our ability to recruit and retain qualified regulatory and research and development personnel;

changes in investors' and securities analysts' perception of the business risks and conditions of our business;

changes in our relationship with key collaborators;

changes in the market valuation or earnings of our competitors or companies viewed as similar to us;

changes in key personnel;

depth of the trading market in our common stock;

changes in our capital structure, such as future issuances of securities or the incurrence of additional debt;

the granting or exercise of employee stock options or other equity awards;

realization of any of the risks described under this section titled "Risk Factors"; and

general market and economic conditions.

In addition, the equity markets have experienced significant price and volume fluctuations that have affected the market prices for the securities of newly public companies for a number of reasons, including reasons that may be unrelated to our business or operating performance. These broad market fluctuations may result in a material decline in the market price of our common stock and you may not be able to sell your shares at prices you deem acceptable. In the past, following periods of volatility in the equity markets, securities class action lawsuits have been instituted against public companies. Such litigation, if instituted against us, could result in substantial cost and the diversion of management attention.

Our stockholders may be diluted by exercises of outstanding options and warrants.

As of March 31, 2015, we had outstanding options to purchase an aggregate of 1,888,375 shares of our common stock at a weighted-average exercise price of $10.50 per share and warrants to purchase an aggregate of 1,136,078 shares of our common stock at a weighted-average exercise price of $13.47 per share (of which warrants to purchase 75,000 shares have anti-dilution protection that will reduce the exercise price thereof to our lowest sales price if we sell any stock in this offering at a price of less than $10 per share). The exercise of such outstanding options and warrants will result in dilution of the value of our shares.

Reports published by securities or industry analysts, including projections in those reports that exceed our actual results, could adversely affect our common stock price and trading volume.

Securities research analysts establish and publish their own periodic projections for our business. These projections may vary widely from one another and may not accurately predict the results we actually achieve. Our stock price may decline if our actual results do not match securities research analysts' projections. Similarly, if one or more of the analysts who writes reports on us downgrades our stock or publishes inaccurate or unfavorable research about our business, our stock price could decline. If one or more of these analysts ceases coverage of our company or fails to publish reports on us regularly, our stock price or trading volume could decline. While we expect securities research analyst coverage, if no securities or industry analysts begin to cover us, the trading price for our stock and the trading volume could be adversely affected.

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Our directors and executive officers have substantial influence over us and could delay or prevent a change in corporate control.

Our directors and executive officers, together with their affiliates, in the aggregate beneficially own approximately 31.6% of our outstanding common stock, based on the number of shares outstanding on June 30, 2015. Assuming for illustrative purposes that 1,626,016 shares of our common stock are sold in this offering at a price of $12.30 per share, which was the last reported sale price of our common stock on The NASDAQ Capital Market on July 14, 2015, after giving effect to this offering, our directors and executive officers, together with their affiliates, would, in the aggregate, beneficially own approximately 27.7% of our outstanding common stock. These stockholders, acting together, have significant influence over the outcome of matters submitted to our stockholders for approval, including the election of directors and any merger, consolidation or sale of all or substantially all of our assets. In addition, these stockholders, acting together, have significant influence over our management and affairs. Accordingly, this concentration of ownership might harm the market price of our common stock by:

delaying, deferring or preventing a change in control;

impeding a merger, consolidation, takeover or other business combination involving us; or

discouraging a potential acquirer from making a tender offer or otherwise attempting to obtain control of us.

Regulatory Risks Relating to Our Business

We conduct business in a heavily regulated industry, and if we are unable to obtain regulatory clearance or approvals in the United States, if we experience delays in receiving clearance or approvals, or if we do not gain acceptance from other laboratories of any cleared or approved diagnostic tests at their facilities, our growth strategy may not be successful.

We currently offer our proprietary tests in conjunction with our comprehensive panel of laboratory services in our CLIA-certified and CAP-accredited laboratory. Because we currently offer these tests and services solely for use within our laboratory, we believe we may market the tests as laboratory developed tests (LDTs), which are tests designed, manufactured and used within a single laboratory. Although the Food and Drug Administration ("FDA") has statutory authority to assure that medical devices, including LDTs, are safe and effective for their intended uses, the FDA has generally exercised its enforcement discretion and not enforced applicable regulations with respect to LDTs. Specifically, under current FDA enforcement policies and guidance, LDTs generally do not require FDA premarket clearance or approval before commercialization, and we have marketed our LDTs on that basis (although, the FDA has recently announced that such policy may be changing). While we believe that we are currently in material compliance with applicable laws and regulations as historically enforced by the FDA, we cannot assure you that the FDA will agree with our determination, and a determination that we have violated these laws and regulations, or a public announcement that we are being investigated for possible violations, could adversely affect our business, prospects, results of operations or financial condition.

In addition, an element of our long-term strategy is to place molecular diagnostic tests on-site with other laboratories to broaden access to our technology and increase demand for our tests and any future diagnostic tests that we may develop. If we were to offer our tests through third-party laboratories, these tests would most likely not be subject to the FDA's current exercise of enforcement discretion over LDTs, and would be subject to the applicable medical device regulations. For example, these tests could become subject to the FDA's requirements for premarket review. Unless an exemption applies, generally, before a new medical device or a new use for a medical device may be sold or distributed in the United States, the medical device must receive either FDA clearance of a 510(k) pre-market notification or pre-market approval. As a result, before we can market or distribute our

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tests in the United States for use by other clinical testing laboratories, we must first obtain pre-market clearance or pre-market approval from FDA. We have not yet applied for clearance or approval from FDA, and would need to complete additional validations before we are ready to apply. We believe it would likely take two years or more to conduct the studies and trials necessary to obtain approval from FDA to commercially launch any of our proprietary products outside of our clinical laboratory. Once we do apply, we may not receive FDA clearance or approval for the commercial use of our tests on a timely basis, or at all. If we are unable to obtain clearance or approval or if clinical diagnostic laboratories do not accept our tests, our ability to grow our business by deploying our tests could be compromised.

Recent announcements from the Federal Food and Drug Administration may impose additional regulatory obligations and costs upon our business.

On October 3, 2014 the FDA issued two draft guidance documents regarding its intent to modify its policy of enforcement discretion and increase oversight over LDTs. The two draft guidance documents are entitled "Framework for Regulatory Oversight of Laboratory Developed Tests (LDTs)" (the "Framework Guidance") and "FDA Notification and Medical Device Reporting for Laboratory Developed Test (LDTs)" (the "Notification Guidance"). According to the Framework Guidance, FDA plans to modify its policy of enforcement discretion with respect to LDTs using a phased-in, risk-based approach consistent with the existing classification of medical devices. Thus, the FDA plans to begin to enforce its medical device requirements, including premarket submission requirements, to many LDTs that have historically been marketed without FDA premarket review and oversight. The FDA states its intention in the Framework Guidance to publish general LDT classification guidance within 18 months of the date on which the Framework Guidance is finalized. According to the Framework Guidance, devices that are already in use at the time FDA initiates enforcement of the premarket review requirements will be permitted to remain in use pending FDA's review and consideration of the premarket submission so long as a premarket submission is timely made. For the highest risk LDTs, the Framework Guidance provides that enforcement of the premarket submission requirements will begin 12 months after the guidance is finalized. For lower risk LDTs, enforcement will be phased in over the following four to nine years. Under this new risk based approach, it is possible that some level of pre-market review may be required for our LDTs either a 510(k) or PMA which may require us to generate additional clinical data. While the FDA has proposed that devices that are already in use at the time FDA initiates enforcement of the premarket review requirements will be permitted to remain in use pending FDA's review and consideration of the premarket submission so long as a premarket submission is timely made, we may nevertheless be required to cease commercial sales of our products and conduct additional clinical testing prior to making submissions to the FDA to obtain premarket clearance or approval.

The draft guidance documents are subject to public comment. The final date for comments was February 2, 2015. We cannot tell at this time what additional costs and regulatory burdens, any final FDA guidance or FDA enforcement of its regulations may have on our business or operations.

If we and our tests become subject to FDA's enforcement of its medical device regulations pursuant to the FDA's plans to modify its policy of enforcement discretion with respect to LDTs, we may be subject to significant and onerous regulatory obligations. Even if the FDA does not finalize these Guidances, it is possible that Congress many act to impose new regulatory requirements on LDTs. See section entitled *"Risk Factors Regulatory Risks Relating to Our Business If the FDA regulates LDTs as proposed, then it would classify LDTs according to the current system used to regulate medical devices. Under that system, there are three different classes of medical devices, with the requirements becoming more stringent depending on the Class."*

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If our laboratory facilities become damaged or inoperable, or we are required to vacate any facility, our ability to provide services and pursue our research and development efforts may be jeopardized.

We currently derive substantially all of our revenues from our laboratory testing services. We do not have any clinical reference laboratory facilities outside of our facilities in Rutherford, New Jersey, Morrisville, North Carolina and Hyderabad, India. Our facilities and equipment could be harmed or rendered inoperable by natural or man-made disasters, including fire, flooding and power outages, which may render it difficult or impossible for us to perform our tests or provide laboratory services for some period of time. The inability to perform our tests or the backlog of tests that could develop if any of our facilities is inoperable for even a short period of time may result in the loss of customers or harm to our reputation or relationships with collaborators, and we may be unable to regain those customers or repair our reputation in the future. Furthermore, our facilities and the equipment we use to perform our research and development work could be costly and time-consuming to repair or replace.

Additionally, a key component of our research and development process involves using biological samples and the resulting data sets and medical histories, as the basis for our diagnostic test development. In some cases, these samples are difficult to obtain. If the parts of our laboratory facilities where we store these biological samples are damaged or compromised, our ability to pursue our research and development projects, as well as our reputation, could be jeopardized. We carry insurance for damage to our property and the disruption of our business, but this insurance may not be sufficient to cover all of our potential losses and may not continue to be available to us on acceptable terms, if at all.

Further, if any of our laboratories became inoperable we may not be able to license or transfer our proprietary technology to a third-party, with established state licensure and CLIA certification under the scope of which our diagnostic tests could be performed following validation and other required procedures, to perform the tests. Even if we find a third-party with such qualifications to perform our tests, such party may not be willing to perform the tests for us on commercially reasonable terms. Moreover, we believe our tests are currently subject to an exercise of enforcement discretion by the FDA because the tests are considered LDTs. If we are required to find a third-party laboratory to conduct our testing services, we believe the FDA would consider our tests to be medical devices that are no longer subject to its exercise of enforcement discretion for LDTs. In that case, we may be required to obtain premarket clearance or approval prior to offering our tests, which would be time-consuming and costly and could result in delays in our ability to sell or offer our tests.

Security breaches, loss of data, and other disruptions could compromise sensitive information related to our business or prevent us from accessing critical information and expose us to fines, penalties, liability, and adverse effects to our business and our reputation.

In the ordinary course of our business, we and our third-party billing and collections provider collect and store sensitive data, including legally protected health information, personally identifiable information, intellectual property, and proprietary business information owned or controlled by ourselves or our customers, payors, and biopharmaceutical partners. The secure processing, storage, maintenance, and transmission of this critical information is vital to our operations and business strategy, and we devote significant resources to protecting such information. Although we take measures to protect sensitive information from unauthorized access or disclosure, our information technology and infrastructure, and that of our third-party billing and collections provider, may be vulnerable to attacks by hackers or viruses or breached due to employee error, malfeasance, or other disruptions. Any such breach or interruption could compromise our networks, and the information stored there could be accessed by unauthorized parties, publicly disclosed, lost, or stolen. Any such improper access or disclosure, or loss of information could require us to provide notice to the affected individuals, the press, and regulatory bodies, result in legal claims or proceedings, liability, fines and

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penalties under laws that protect the privacy of personal information, such as the Health Insurance Portability and Accountability Act of 1996 ("HIPAA"), the Health Information Technology for Economic and Clinical Health Act ("HITECH"), their implementing regulations, and similar state laws. Unauthorized access, loss, or dissemination could also disrupt our operations, including our ability to conduct our analyses, provide test results, bill payors or patients, process claims and appeals, provide customer assistance services, conduct research and development activities, collect, process, and prepare company financial information, provide information about our products and other patient and physician education and outreach efforts through our website, manage the administrative aspects of our business, and damage our reputation, any of which could adversely affect our business.

The U.S. Department of Health and Human Services Office for Civil Rights ("OCR") may impose penalties on a covered entity, such as us, for a failure to comply with a requirement of HIPAA. Penalties will vary significantly depending on factors such as the date of the violation, whether the covered entity knew or should have known of the failure to comply, or whether the covered entity's failure to comply was due to willful neglect. These penalties include civil monetary penalties of $100 to $50,000 per violation, up to an annual, per violation cap of $1,500,000. A single breach incident can result in violations of multiple standards, resulting in possible penalties potentially in excess of $1,500,000. A person who knowingly obtains or discloses individually identifiable health information in violation of HIPAA may face a criminal penalty of up to $50,000 and up to one year imprisonment. The criminal penalties increase to $100,000 and up to five years imprisonment if the wrongful conduct involves false pretenses, and to $250,000 and up to 10 years imprisonment if the wrongful conduct involves the intent to sell, transfer, or use identifiable health information for commercial advantage, personal gain, or malicious harm. The U.S. Department of Justice is responsible for criminal prosecutions under HIPAA.

HIPAA authorizes state attorneys general to file suit under HIPAA on behalf of state residents. Courts can award damages, costs and attorneys' fees related to violations of HIPAA in such cases. While HIPAA does not create a private right of action allowing individuals to sue us in civil court for HIPAA violations, its standards have been used as the basis for a duty of care in state civil suits such as those for negligence or recklessness in the misuse or breach of Protected Health Information.

In addition, HIPAA mandates that the Secretary of HHS conduct periodic compliance audits of HIPAA covered entities for compliance with the HIPAA privacy and security regulations. It also tasks HHS with establishing a methodology whereby harmed individuals who were the victims of breaches of unsecured Protected Health Information may receive a percentage of the Civil Monetary Penalty fine paid by the violator.

HIPAA further requires covered entities to notify affected individuals "without unreasonable delay and in no case later than 60 calendar days after discovery of the breach" if their unsecured Protected Health Information is subject to an unauthorized access, use or disclosure. If a breach affects 500 patients or more, it must be reported to HHS and local media without unreasonable delay, and HHS will post the name of the breaching entity on its public website. If a breach affects fewer than 500 individuals, the covered entity must log it and notify HHS at least annually.

In addition, the interpretation and application of consumer, health-related, and data protection laws in the United States, Europe, and elsewhere are often uncertain, contradictory, and in flux. It is possible that these laws may be interpreted and applied in a manner that is inconsistent with our practices. If so, this could result in government-imposed fines or orders requiring that we change our practices, which could adversely affect our business. In addition, these privacy regulations may differ from country to country, and may vary based on whether testing is performed in the United States or in the local country. Complying with these various laws could cause us to incur substantial costs or require us to change our business practices and compliance procedures in a manner adverse to our business.

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Health care policy changes, including recently enacted legislation reforming the U.S. health care system, may have a material adverse effect on our financial condition, results of operations and cash flows.

In March 2010, U.S. President Barack Obama signed the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act (collectively, "PPACA"), which makes a number of substantial changes in the way health care is financed by both governmental and private insurers. Among other things, the PPACA:

- Requires each medical device manufacturer to pay a sales tax equal to 2.3% of the price for which such manufacturer sells its medical devices, beginning in 2013. This tax may apply to some or all of our current products and products which are in development.

- Mandates a reduction in payments for clinical laboratory services paid under the Medicare Clinical Laboratory Fee Schedule of 1.75% for the years 2011 through 2015. In addition, a productivity adjustment is made to the fee schedule payment amount. These changes in payments apply to some or all of the clinical laboratory test services we furnish to Medicare beneficiaries.

- Establishes an Independent Payment Advisory Board to reduce the per capita rate of growth in Medicare spending. The Independent Payment Advisory Board has broad discretion to propose policies, which may have a negative impact on payment rates for services, including clinical laboratory services, beginning in 2016, and for hospital services beginning in 2020.

Although some of these provisions may negatively impact payment rates for clinical laboratory services, the PPACA also extends coverage to approximately 32 million previously uninsured people, which may result in an increase in the demand for our tests and services. The mandatory purchase of insurance has been strenuously opposed by a number of state governors, resulting in lawsuits challenging the constitutionality of certain provisions of the PPACA. On June 28, 2012, the Supreme Court upheld the constitutionality of the health care reform law, with the exception of certain provisions dealing with the expansion of Medicaid coverage under the law. While most of the law's provisions went into effect in 2013 and 2014, Congress has proposed a number of legislative initiatives, including possible repeal of the PPACA. On June 25, 2015, the Supreme Court affirmed the Fourth Circuit Court of Appeals in King v. Burwell, which allows the federal government to continue to extend tax subsidies to those individuals who purchased coverage through federal exchanges, in addition to the exchanges established by individual states. Although other federal circuit courts found that the subsidies were not permitted, the Supreme Court has now held that the tax subsidies to individuals who purchased through the federal exchanges are permitted under PPACA.

In addition, other legislative changes have been proposed and adopted since the PPACA was enacted. On August 2, 2011, the President signed into law the Budget Control Act of 2011, which, among other things, creates the Joint Select Committee on Deficit Reduction to recommend proposals in spending reductions to Congress. The Joint Select Committee did not achieve a targeted deficit reduction of at least $1.2 trillion for the years 2013 through 2021, triggering the legislation's automatic reduction to several government programs. This includes aggregate reductions to Medicare payments to providers of 2% per fiscal year, starting in 2013. This 2% sequester was recently extended through 2024.

The full impact on our business of the PPACA and the new law is uncertain. In addition, on February 22, 2012, the President signed the Middle Class Tax Relief and Job Creation Act of 2012 ("MCTRJCA"), which, among other things, mandated an additional change in Medicare reimbursement for clinical laboratory services. This legislation requires a rebasing of the Medicare clinical laboratory fee schedule to effect a 2% reduction in payment rates otherwise determined for 2013. This will serve as a base for 2014 and subsequent years. As a result of the changes mandated by PPACA and

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MCTRJCA, the Centers for Medicare & Medicaid Services ("CMS") projects laboratory services for 2015 will be reduced by approximately 0.25%.

Further, in 2014, Congress passed the Protecting Access to Medicare Act or PAMA which also makes significant changes in the way the Medicare will pay for laboratory services. Under PAMA, laboratories will be required to report the amount that they are paid by third party payors for each test beginning in January 2016. CMS will use this data to calculate a weighted median for each test. That new price will become effective on January 1, 2017, although any resulting reductions will be phased in over time. This data reporting process will be repeated every three years for most tests, although certain advanced diagnostic tests will have to report every year. It is possible that some of our tests may qualify as Advanced Diagnostic Laboratory Tests, which will require us to submit pricing annually. In addition, under PAMA, we will also be required to obtain new codes from CMS or any entity it designates, for our tests that do not currently have codes. If PAMA results in a significant reduction in the prices for our tests, it could have a significant impact on our revenues.

Certain of our laboratory services are paid under the Medicare Physician Fee Schedule and, under the current statutory formula, the rates for these services are updated annually. For the past several years, the application of the statutory formula would have resulted in substantial payment reductions if Congress failed to intervene. In the past, Congress passed interim legislation to prevent the decreases. In April 2015, however, the Medicare Access and CHIP Reauthorization Act of 2015, or MACRA, was signed into law, which repealed and replaced the statutory formula for Medicare payment adjustments to physicians. MACRA provides a permanent end to the annual interim legislative updates that had previously been necessary to delay or prevent significant reductions to payments under the Medicare Physician Fee Schedule. MACRA extended existing payment rates through June 30, 2015, with a 0.5% update for July 1, 2015 through December 31, 2015, and for each calendar year through 2019, after which there will be a 0% annual update each year through 2025. In addition, MACRA requires the establishment of the Merit-Based Incentive Payment System ("MIPS"), beginning in 2019, under which physicians may receive performance-based payment incentives or payment reductions based on their performance with respect to clinical quality, resource use, clinical improvement activities and meaningful use of electronic health records. MACRA also requires the Centers for Medicare & Medicaid Services, or CMS, beginning in 2019, to provide incentive payments for physicians and other eligible professionals that participate in alternative payment models, such as accountable care organizations, that emphasize quality and value over the traditional volume-based fee-for-service model. It is unclear what impact, if any, MACRA will have on our business and operating results, but any resulting decrease in payment may result in reduced demand for our services, which could adversely impact our revenues and results of operations.

In addition, many of the Current Procedure Terminology ("CPT") procedure codes that we use to bill our tests were revised by the AMA, effective January 1, 2013. In the Final Rule, CMS announced that it has decided to keep the new molecular codes on the Clinical Laboratory Fee Schedule (CLFS), rather than move them to the Medicare Physician Fee Schedule as some stakeholders had urged. CMS also announced that for 2013 it would price the new codes using a "gapfilling" process by which it will refer the codes to the Medicare contractors to allow them to determine an appropriate price. Those prices were determined and became effective January 1, 2014. In addition, CMS also stated that it would not recognize certain of the new codes for Multi-Analyte Assays with Algorithmic Assays (MAAAs) because it does not believe they qualify as clinical laboratory tests. However, more recently, it has determined that the individual contractors may determine whether to pay for MAAA tests on a case by case basis. Our reimbursement could be adversely affected by CMS' action in this area. There can be no guarantees that Medicare and other payors will establish positive or adequate coverage policies or reimbursement rates.

We cannot predict whether future health care initiatives will be implemented at the federal or state level, or how any future legislation or regulation may affect us. The taxes imposed by the new federal

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legislation and the expansion of government's role in the U.S. health care industry as well as changes to the reimbursement amounts paid by payors for our products or our medical procedure volumes may reduce our profits and have a materially adverse effect on our business, financial condition, results of operations and cash flows. Moreover, Congress has proposed on several occasions to impose a 20% coinsurance on patients for clinical laboratory tests reimbursed under the clinical laboratory fee schedule, which would require us to bill patients for these amounts. Because of the relatively low reimbursement for many clinical laboratory tests, in the event that Congress were to ever enact such legislation, the cost of billing and collecting for these services would often exceed the amount actually received from the patient and effectively increase our costs of billing and collecting.

If FDA were to begin requiring approval or clearance of our tests, we could incur substantial costs and time delays associated with meeting requirements for pre-market clearance or approval or we could experience decreased demand for, or reimbursement of, our tests.

Although FDA maintains that it has authority to regulate the development and use of LDTs, such as ours, as medical devices, it has not exercised its authority with respect to most LDTs as a matter of enforcement discretion. FDA does not generally extend its enforcement discretion to reagents or software provided by third parties and used to perform LDTs, and therefore these products must typically comply with FDA medical device regulations, which are wide-ranging and govern, among other things: product design and development, product testing, product labeling, product storage, pre-market clearance or approval, advertising and promotion and product sales and distribution.

We believe that our proprietary tests, as utilized in our laboratory testing, are LDTs. As a result, we believe that pursuant to FDA's current policies and guidance that FDA does not require that we obtain regulatory clearances or approvals for our LDTs. The container we provide for collection and transport of tumor samples from a pathology laboratory to our clinical reference laboratory may be a medical device subject to FDA's enforcement of its medical device regulations but we believe it is currently exempt from pre-market review by FDA. While we believe that we are currently in material compliance with applicable laws and regulations, we cannot assure you that FDA or other regulatory agencies would agree with our determination, and a determination that we have violated these laws, or a public announcement that we are being investigated for possible violations of these laws, could adversely affect our business, prospects, results of operations or financial condition.

Moreover, FDA guidance and policy pertaining to diagnostic testing is continuing to evolve and is subject to ongoing review and revision. A significant change in any of the laws, regulations or policies may require us to change our business model in order to maintain regulatory compliance. At various times since 2006, FDA has issued guidance documents or announced draft guidance regarding initiatives that may require varying levels of FDA oversight of our tests. For example, in June 2010, FDA announced a public meeting to discuss the agency's oversight of LDTs prompted by the increased complexity of LDTs and their increasingly important role in clinical decision-making and disease management, particularly in the context of personalized medicine. FDA indicated that it was considering a risk-based application of oversight to LDTs and that, following public input and discussion, it might issue separate draft guidance on the regulation of LDTs, which ultimately could require that we seek and obtain either pre-market clearance or approval of LDTs, depending upon the risk-based approach FDA adopts. The public meeting was held in July 2010 and further public comments were submitted to FDA through September 2010. Section 1143 of the Food and Drug Administration Safety and Innovation Act, signed by the U.S. President on July 9, 2012, required FDA to notify U.S. Congress at least 60 days prior to issuing a draft or final guidance regulating LDTs and provide details of the anticipated action.

On July 31, 2014, FDA notified Congress pursuant to the FDASIA that it intended to issue draft Guidances that would modify its policy of enforcement discretion with respect to LDTs and begin to enforce the applicable medical device regulations with respect to such products and tests. On

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October 3, 2014, the FDA issued two separate draft guidances: "Framework for Regulatory Oversight of Laboratory Developed Tests (LDTs)" ("The Framework Draft Guidance") and "FDA Notification and Medical Device Reporting for Laboratory Developed Tests" (the "Notification Draft Guidance."). In the Framework Draft Guidance, FDA states that after the Guidances are finalized, it will no longer exercise enforcement discretion with respect to LDTs and will, instead, regulate them in a risk-based manner consistent with the existing classification of medical devices. Thus, the FDA plans to begin to enforce its medical device requirements, including premarket submission requirements, on LDTs that have historically been marketed without FDA premarket review and oversight. Comments on the Draft Guidances were due on February 2 and those comments are now being considered by the FDA. It is not known when the FDA may issue final Guidances or what form those Guidances may take.

The Framework Draft Guidance states that within six months after the Guidances are finalized, all laboratories will be required to give notice to the FDA and provide basic information concerning the nature of the LDTs offered. The FDA will then begin a phased review of the LDTs available, based on the risk associated with the test. For the highest risk LDTs, which the FDA classifies as Class III devices, the Framework Draft Guidance states that the FDA will begin to require premarket review within 12 months after the Guidance is finalized. Other high risk LDTs will be reviewed over the next four years and then lower risk tests, which will be classified as Class II, will be reviewed in the following four to nine years. The Framework Draft Guidance states that FDA expects to issue a separate Guidance describing the criteria for its risk-based classification 18-24 months after the Guidances are finalized. At this time, we cannot predict how our tests would be classified.

If the FDA regulates LDTs as proposed, then it would classify LDTs according to the current system used to regulate medical devices. Under that system, there are three different classes of medical devices, with the requirements becoming more stringent depending on the Class.

If and when the Guidances are finalized, and the FDA begins to actively enforce its premarket submission regulations with respect to LDTs, we will be required to obtain premarket clearance for our tests under Section 510(k) of the FDCA or approval of a PMA, unless an exemption applies. The premarket review process may require that we conduct clinical trials in support of a 510(k) submission or PMA application. These trials generally require an effective Investigational Device Exemption, or IDE, from FDA for a specified number of patients, unless the product is exempt from IDE requirements or deemed a non-significant risk device eligible for more abbreviated IDE requirements. The IDE application must be supported by appropriate data, such as animal and laboratory testing results. Clinical trials may begin 30 days after the submission of the IDE application unless FDA or the appropriate institutional review boards at the clinical trial sites place the trial on clinical hold.

The process for submitting a 510(k) premarket notification and receiving FDA clearance usually takes from three to twelve months, but it can take significantly longer and clearance is never guaranteed. The process for submitting and obtaining FDA approval of a PMA is much more costly, lengthy and uncertain. It generally takes from one to three years or even longer and approval is not guaranteed. PMA approval typically requires extensive clinical data and can be significantly longer, more expensive and more uncertain than the 510(k) clearance process. Despite the time, effort and expense expended, there can be no assurance that a particular test ultimately will be cleared or approved by the FDA through either the 510(k) clearance process or the PMA process on a timely basis, or at all.

Under the Guidances, we could also for the first time be subject to enforcement of other regulatory requirements applicable to medical devices. For example, our currently-marketed LDTs would also be subject to significant post-market requirements. After a device is placed on the market, regardless of the classification or pre-market pathway, it remains subject to significant regulatory requirements. Even if regulatory approval or clearance of a medical device is granted, FDA may impose limitations or restrictions on the uses and indications for which the device may be labeled and

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promoted. Medical devices may be marketed only for the uses and indications for which they are cleared or approved.

Device manufacturers must also comply with the FDA's registration and device listing requirements. A medical device manufacturer's manufacturing processes and those of its suppliers are required to comply with the applicable portions of the Quality Systems Regulation, which covers the methods and documentation of the design, testing, production, processes, controls, quality assurance, labeling, packaging and shipping of medical devices. Domestic facility records and manufacturing processes are subject to periodic unscheduled inspections by FDA. FDA also may inspect foreign facilities that export products to the United States.

Failure to comply with applicable regulatory requirements can result in enforcement action by FDA, which may include any of the following sanctions: warning letters, fines, injunctions, civil or criminal penalties, recall or seizure of current or future products, operating restrictions, partial suspension or total shutdown of production, denial of 510(k) clearance or PMA applications for new products, or challenges to or withdrawal of existing 510(k) clearances or PMA applications.

We cannot provide any assurance that FDA regulation, including pre-market review, will not be required in the future for our tests, whether through additional guidance issued by FDA, new enforcement policies adopted by FDA or new legislation enacted by Congress. We believe it is possible that legislation will be enacted into law or guidance could be issued by FDA, which may result in increased regulatory burdens for us to continue to offer our tests or to develop and introduce new tests. Given the attention Congress continues to give to these issues, legislation affecting this area may be enacted into law. The House Energy and Commerce Committee has recently drafted legislation, which if passed, would create a new center within the FDA to regulate LDTs. The new legislation would clarify that LDTs are not considered medical devices under applicable FDA law, but would still subject many LDTs to regulatory review to ensure their clinical validity. If enacted, such legislation could result in increased regulatory burdens on us as we continue to develop and introduce new tests.

In addition, the Secretary of the Department of Health and Human Services requested that its Advisory Committee on Genetics, Health and Society make recommendations about the oversight of genetic testing. A final report was published in April 2008. If the report's recommendations for increased oversight of genetic testing were to result in further regulatory burdens, they could negatively affect our business and delay the commercialization of tests in development.

The requirement of pre-market review could negatively affect our business until such review is completed and clearance or approval to market is obtained. FDA could require that we stop selling our tests pending pre-market clearance or approval. If FDA allows our tests to remain on the market but there is uncertainty about our tests, if they are labeled investigational by FDA or if labeling claims FDA allows us to make are very limited, orders or reimbursement may decline. The regulatory approval process may involve, among other things, successfully completing additional clinical trials and making a 510(k) submission, or filing a PMA application with FDA. If FDA requires pre-market review, our tests may not be cleared or approved on a timely basis, if at all. We may also decide voluntarily to pursue FDA pre-market review of our tests if we determine that doing so would be appropriate.

Additionally, should future regulatory actions affect any of the reagents we obtain from vendors and use in conducting our tests, our business could be adversely affected in the form of increased costs of testing or delays, limits or prohibitions on the purchase of reagents necessary to perform our testing.

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We are subject to federal and state health care fraud and abuse laws and regulations and could face substantial penalties if we are unable to fully comply with such laws.

We are subject to health care fraud and abuse regulation and enforcement by both the federal government and the states in which we conduct our business. These health care laws and regulations include, for example:

- the federal Anti-kickback Statute, which prohibits, among other things, persons or entities from soliciting, receiving, offering or providing remuneration, directly or indirectly, in return for or to induce either the referral of an individual for, or the purchase order or recommendation of, any item or services for which payment may be made under a federal health care program such as the Medicare and Medicaid programs;

- the federal physician self-referral prohibition, commonly known as the Stark Law, which prohibits physicians from referring Medicare or Medicaid patients to providers of "designated health services" with whom the physician or a member of the physician's immediate family has an ownership interest or compensation arrangement, unless a statutory or regulatory exception applies;

- HIPAA, which established federal crimes for knowingly and willfully executing a scheme to defraud any health care benefit program or making false statements in connection with the delivery of or payment for health care benefits, items or services;

- the federal civil monetary penalties law, which prohibits, among other things, offering or transferring remuneration, including waivers of co-payments and deductible amounts (or any part thereof), to a federal healthcare beneficiary that a person knows or should know is likely to influence the beneficiary's decision to order or receive items or services reimbursable by the government from a particular provider or supplier;

- federal false claims laws, which, prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, claims for payment from Medicare, Medicaid, or other third-party payors that are false or fraudulent; and

- state law equivalents of each of the above federal laws, such as anti-kickback and false claims laws, which may apply to items or services reimbursed by any third-party payor, including commercial insurers.

Further, the PPACA, among other things, amends the intent requirement of the federal anti-kickback and criminal health care fraud statutes. A person or entity no longer needs to have actual knowledge of this statute or specific intent to violate it. In addition, the government may assert that a claim including items or services resulting from a violation of the federal anti-kickback statute constitutes a false or fraudulent claim for purposes of the false claims statutes.

The PPACA, among other things, also imposed new reporting requirements on manufacturers of certain devices, drugs and biologics for certain payments and transfers of value by them and in some cases their distributors to physicians and teaching hospitals, as well as ownership and investment interests held by physicians and their immediate family members. Failure to submit required information timely, completely and accurately for all payments, transfers of value and ownership or investment interests may result in civil monetary penalties of up to an aggregate of $150,000 per year (or up to an aggregate of $1.0 million per year for "knowing failures"). Manufacturers must submit reports by the 90th day of each calendar year. Any failure to comply with these reporting requirements could result in significant fines and penalties. Because we manufacture our own LDTs solely for use by or within our own laboratory, we believe that we are exempt from these reporting requirements. We cannot assure you, however, that the government will agree with our determination, and a determination that we have violated these laws and regulations, or a public announcement that we are

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being investigated for possible violations, could adversely affect our business, prospects, results of operations or financial condition.

We have adopted policies and procedures designed to comply with these laws, including policies and procedures relating to financial arrangements between us and physicians who refer patients to us. In the ordinary course of our business, we conduct internal reviews of our compliance with these laws. Our compliance is also subject to governmental review. The government alleged that we engaged in improper billing practices in the past and we may be the subject of such allegations in the future as the growth of our business and sales organization may increase the potential of violating these laws or our internal policies and procedures. The risk of our being found in violation of these laws and regulations is further increased by the fact that many of them have not been fully interpreted by the regulatory authorities or the courts, and their provisions are open to a variety of interpretations.

Any action brought against us for violation of these laws or regulations, even if we successfully defend against it, could cause us to incur significant legal expenses and divert our management's attention from the operation of our business. If our operations are found to be in violation of any of these laws and regulations, we may be subject to any applicable penalty associated with the violation, including civil and criminal penalties, damages and fines, and/or exclusion from participation in Medicare, Medi-Cal or other state or federal health care programs, we could be required to refund payments received by us, and we could be required to curtail or cease our operations. Any of the foregoing consequences could seriously harm our business and our financial results.

We are required to comply with laws governing the transmission, security and privacy of health information that require significant compliance costs, and any failure to comply with these laws could result in material criminal and civil penalties.

Under the administrative simplification provisions of HIPAA, the U.S. Department of Health and Human Services has issued regulations which establish uniform standards governing the conduct of certain electronic health care transactions and protecting the privacy and security of Protected Health Information used or disclosed by health care providers and other covered entities. Three principal regulations with which we are currently required to comply have been issued in final form under HIPAA: privacy regulations, security regulations and standards for electronic transactions.

The privacy regulations cover the use and disclosure of Protected Health Information by health care providers. It also sets forth certain rights that an individual has with respect to his or her Protected Health Information maintained by a health care provider, including the right to access or amend certain records containing Protected Health Information or to request restrictions on the use or disclosure of Protected Health Information. We have implemented policies, procedures and standards in an effort to comply appropriately with the final HIPAA security regulations, which establish requirements for safeguarding the confidentiality, integrity and availability of Protected Health Information, which is electronically transmitted or electronically stored. The HIPAA privacy and security regulations establish a uniform federal "floor" and do not supersede state laws that are more stringent or provide individuals with greater rights with respect to the privacy or security of, and access to, their records containing Protected Health Information. As a result, we are required to comply with both HIPAA privacy regulations and varying state privacy and security laws. Moreover, HITECH, among other things, established certain health information security breach notification requirements. Under HIPAA, a covered entity must notify any individual "without unreasonable delay and in no case later than 60 calendar days after discovery of the breach" if their unsecured Protected Health Information is subject to an unauthorized access, use or disclosure. If a breach affects 500 patients or more, it must be reported to HHS and local media without unreasonable delay, and HHS will post the name of the breaching entity on its public website. If a breach affects fewer than 500 individuals, the covered entity must log it and notify HHS at least annually.

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These laws contain significant fines and other penalties for wrongful use or disclosure of Protected Health Information. We have implemented practices and procedures to meet the requirements of the HIPAA privacy regulations and state privacy laws. In addition, we are in the process of taking necessary steps to comply with HIPAA's standards for electronic transactions, which establish standards for common health care transactions. Given the complexity of the HIPAA, HITECH and state privacy restrictions, the possibility that the regulations may change, and the fact that the regulations are subject to changing and potentially conflicting interpretation, our ability to comply with the HIPAA, HITECH and state privacy requirements is uncertain and the costs of compliance are significant. To the extent that we submit electronic health care claims and payment transactions that do not comply with the electronic data transmission standards established under HIPAA and HITECH, payments to us may be delayed or denied. Additionally, the costs of complying with any changes to the HIPAA, HITECH and state privacy restrictions may have a negative impact on our operations. We could be subject to criminal penalties and civil sanctions for failing to comply with the HIPAA, HITECH and state privacy restrictions, which could result in the incurrence of significant monetary penalties. For further discussion of HIPAA and the impact on our business, see the section in our Annual Report on Form 10-K for the fiscal year ended December 31, 2014 entitled *"Risk Factors Risks Related to Our Business and Strategy Security breaches, loss of data, and other disruptions could compromise sensitive information related to our business or prevent us from accessing critical information and expose us to fines, penalties, liability, and adverse effects to our business and our reputation."*

Intellectual Property Risks Related to Our Business

We may become involved in lawsuits or other proceedings to protect or enforce our patents or other intellectual property rights, which could be time-consuming and costly to defend, and could result in our loss of significant rights and the assessment of treble damages.

From time to time we may face intellectual property infringement (or misappropriation) claims from third parties. Some of these claims may lead to litigation. The outcome of any such litigation can never be guaranteed, and an adverse outcome could affect us negatively. For example, were a third-party to succeed on an infringement claim against us, we may be required to pay substantial damages (including up to treble damages if such infringement were found to be willful). In addition, we could face an injunction, barring us from conducting the allegedly infringing activity. The outcome of the litigation could require us to enter into a license agreement which may not be pursuant to acceptable or commercially reasonable or practical terms or which may not be available at all. It is also possible that an adverse finding of infringement against us may require us to dedicate substantial resources and time in developing non-infringing alternatives, which may or may not be possible. In the case of diagnostic tests, we would also need to include non-infringing technologies which would require us to re-validate our tests. Any such re-validation, in addition to being costly and time consuming, may be unsuccessful.

Furthermore, we may initiate claims to assert or defend our own intellectual property against third parties. Any intellectual property litigation, irrespective of whether we are the plaintiff or the defendant, and regardless of the outcome, is expensive and time-consuming, and could divert our management's attention from our business and negatively affect our operating results or financial condition. We may not be able to prevent, alone or with our collaborators, misappropriation of our proprietary rights, particularly in countries where the laws may not protect those rights as fully as in the United States. In addition, interference proceedings brought by the USPTO may be necessary to determine the priority of inventions with respect to our patents and patent applications or those of our current or future collaborators.

Finally, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential and proprietary information could be compromised by disclosure during this type of litigation. In addition, there could be public

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announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on our financial condition.

We may not be able to protect our intellectual property rights throughout the world.

Filing, prosecuting and defending patents on our technologies in all countries throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States can be less extensive than those in the United States. In addition, the laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the United States. For example, many foreign countries have compulsory licensing laws under which a patent owner must grant licenses to third parties. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and further, may export otherwise infringing products to territories where we have patent protection, but enforcement rights are not as strong as those in the United States. These products may compete with our technologies in jurisdictions where we do not have any issued patents and our patent claims or other intellectual rights may not be effective or sufficient to prevent them from so competing.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of certain countries do not favor the enforcement of patents and other intellectual property protection, which could make it difficult for us to stop the infringement of our patents generally. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our patents at risk of being invalidated or interpreted narrowly and our patent applications at risk of not issuing and could provoke third parties to assert claims against us. We may not prevail in any lawsuits that we initiate and the damages or other remedies awarded, if any, may not be commercially meaningful. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license.

If we are unable to maintain intellectual property protection, our competitive position could be harmed.

Our ability to compete and to achieve sustained profitability is impacted by our ability to protect our proprietary discoveries and technologies. Currently, we rely on a combination of U.S. and foreign patents and patent applications, copyrights, trademarks, confidentiality or non-disclosure agreements, material transfer agreements, licenses, work for hire agreements, and invention assignment agreements to protect our intellectual property rights. We also maintain certain company know how and technological innovations designed to provide us with a competitive advantage in the market place as trade secrets.

It is possible that our pending patent applications may not result in issued patents. Any patents that may be issued to us might be challenged by third parties as being invalid or unenforceable, or third parties may independently develop similar or competing technology that avoids our patents.

From time to time, the U.S. Supreme Court, other federal courts, the U.S. Congress or the USPTO may change the standards of patentability and any such changes could have a negative impact on our business. For instance, a suit brought in the United States District Court for the Southern District of New York by multiple plaintiffs, including the American Civil Liberties Union ("ACLU"), against Myriad Genetics and the USPTO may have an impact on the biotechnology industry. The case involved certain of Myriad's U.S. patents related to the breast cancer susceptibility genes BRCA1 and BRCA2. Plaintiffs alleged, among other things, that gene related patents (as a whole) stifled diagnostic testing and research that could lead to cures in the future. On June 13, 2013, the Supreme Court ruled

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that isolated genomic DNA is not patent-eligible under section 101 of the Patent Act, but cDNA is patentable. More recently, the U.S. Court of Appeals for the Federal Circuit ruled that a patent held by genetic testing company Sequenom Inc. on detecting fetal DNA in a pregnant woman's blood was invalid. While the decision may be appealed to the Supreme Court, at present, it is unknown exactly how this case, and the Myriad case, will impact biotech patents directed to genetic testing.

In addition, on February 5, 2010, the Secretary's Advisory Committee on Genetics, Health and Society for HHS voted to approve a report entitled "Gene Patents and Licensing Practices and Their Impact on Patient Access to Genetic Tests." That report defines "patent claims on genes" broadly to include claims to isolated nucleic acid molecules as well as methods of detecting particular sequences or mutations. The report also contains six recommendations, including the creation of an exemption from liability for infringement of patent claims on genes for anyone making, using, ordering, offering for sale, or selling a test developed under the patent for patient care purposes, or for anyone using the patent-protected genes in the pursuit of research. The report also recommended that the Secretary should explore, identify, and implement mechanisms that will encourage more voluntary adherence to current guidelines that promote non-exclusive in-licensing of diagnostic genetic and genomic technologies. It is unclear whether these recommendations will be acted upon by the HHS, or if the recommendations would result in a change in law or process that could negatively impact our patent portfolio or future research and development efforts.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein contain forward-looking statements made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements represent our management's judgment regarding future events. In many cases, you can identify forward- looking statements by terminology such as "may," "will," "should," "plan," "expect," "anticipate," "estimate," "predict," "intend," "potential" or "continue" or the negative of these terms or other words of similar import, although some forward-looking statements are expressed differently. All statements other than statements of historical fact included in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein regarding our financial position, business strategy and plans or objectives for future operations are forward-looking statements. We cannot guarantee the accuracy of forward-looking statements, and you should be aware that results and events could differ materially and adversely from those described in the forward-looking statements due to a number of factors.

There are a number of important factors that could cause the actual results to differ materially from those expressed in any forward-looking statement made by us. These factors include, but are not limited to:

- our ability to achieve profitability by increasing sales of our laboratory tests and services and to continually develop and commercialize novel and innovative genomic-based diagnostic tests and services for cancer patients;
- our ability to raise additional capital to meet our liquidity needs;
- our ability to clinically validate our pipeline of genomic microarray tests currently in development;
- our ability to execute on our marketing and sales strategy for our genomic tests and gain acceptance of our tests in the market;
- our ability to keep pace with rapidly advancing market and scientific developments;
- our ability to satisfy U.S. (including FDA) and international regulatory requirements with respect to our tests and services, many of which are new and still evolving;
- our ability to obtain reimbursement from governmental and other third-party payors for our tests and services;
- competition from clinical laboratory services companies, genomic-based diagnostic tests currently available or new tests that may emerge;
- our ability to maintain our clinical collaborations and enter into new collaboration agreements with highly regarded organizations in the cancer field so that, among other things, we have access to thought leaders in the field and to a robust number of samples to validate our genomic tests;
- our ability to maintain our present customer base and obtain new customers;
- potential product liability or intellectual property infringement claims;

our dependency on third-party manufacturers to supply or manufacture our products;

our ability to manage significant fluctuations in our quarterly operating results, which may occur as a result of the timing, size and duration of our contracts with biopharmaceutical companies and clinical research organizations;

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our ability to attract and retain a sufficient number of scientists, clinicians, sales personnel and other key personnel with extensive experience in oncology, who are in short supply;

our ability to obtain or maintain patents or other appropriate protection for the intellectual property in our proprietary tests and services;

our dependency on the intellectual property licensed to us or possessed by third parties;

our ability to expand internationally and launch our tests in emerging markets, such as India and Brazil; and

our ability to adequately support future growth.

You should also consider carefully the statements set forth in the section titled "Risk Factors" or elsewhere in this prospectus supplement, the accompanying prospectus and the documents incorporated or deemed incorporated herein or therein by reference, including but not limited to the risk factors incorporated by reference under "Item 1A. Risk Factors" to Part I of our Annual Report on Form 10-K for the fiscal year ended December 31, 2014 and other factors described elsewhere in this prospectus supplement or in our current and future filings with the SEC, which address various factors that could cause results or events to differ from those described in the forward-looking statements. All subsequent written and oral forward-looking statements attributable to us or to persons acting on our behalf are expressly qualified in their entirety by the applicable cautionary statements. We have no plans to update these forward-looking statements.

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USE OF PROCEEDS

The amount of proceeds from this offering will depend upon the number of shares of our common stock sold and the market price at which they are sold. There can be no assurance that we will be able to sell any shares under or fully utilize the Sales Agreement with Cantor Fitzgerald as a source of financing.

We will retain broad discretion over the use of the net proceeds from the sale of the securities offered hereby. We currently intend to use the net proceeds from this offering, if any, to fund our anticipated contributions to our joint venture with Mayo, expansion of our sales and marketing capabilities, further research and development activities, expansion of business, strategic transactions and working capital and other general corporate purposes.

Pending the use of any net proceeds of this offering, we intend to invest the funds in short-term, investment grade, interest-bearing securities.

The amount and timing of actual expenditures for the purposes set forth above may vary based on several factors, and our management will retain broad discretion as to the ultimate allocation of the proceeds.

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DILUTION

If you invest in our common stock, you will experience immediate and substantial dilution to the extent of the difference between the public offering price per share of our common stock and our pro forma net tangible book value per share after this offering. We calculate net tangible book value per share by dividing our net tangible book value, which is tangible assets less total liabilities, by the number of outstanding shares of our common stock.

Our net tangible book value as of March 31, 2015 was approximately $27.3 million, or $2.77 per share of common stock. After giving effect to our sale in this offering of shares of our common stock in the aggregate amount of $20,000,000 at an assumed public offering price of $12.30 per share (which was the last reported sale price of our common stock on The NASDAQ Capital Market on July 14, 2015), and after deducting the sales agent's fee and our estimated offering expenses payable by us, our as adjusted net tangible book value as of March 31, 2015 would have been approximately $46.3 million, or $4.03 per share of common stock. This represents an immediate increase in as adjusted net tangible book value of $1.26 per share to existing stockholders and an immediate dilution of $8.27 per share to new investors purchasing our common stock in this offering at the assumed public offering price. The following table illustrates this dilution on a per share basis:

Assumed public offering price per share		$ 12.30
Net tangible book value per share as of March 31, 2015	$ 2.77	
Increase in net tangible book value per share attributable to new investors	$ 1.26	
As adjusted net tangible book value per share as of March 31, 2015, after giving effect to this offering		$ 4.03
Dilution per share to new investors		$ 8.27

The table above assumes for illustrative purposes that an aggregate of 1,626,016 shares of our common stock are sold at a price of $12.30 per share, which was the last reported sale price of our common stock on The NASDAQ Capital Market on July 14, 2015, for aggregate gross proceeds of approximately $20,000,000. The shares sold in this offering, if any, will be sold from time to time at various prices. An increase of $1.00 per share in the price at which the shares are sold from the assumed public offering price of $12.30 per share shown in the table above, assuming all of our common stock in the aggregate amount of approximately $20,000,000 is sold at that price, would increase the dilution in net tangible book value per share to new investors in this offering to $9.22 per share, after deducting commissions and estimated offering expenses payable by us. A decrease of $1.00 per share in the price at which the shares are sold from the assumed public offering price of $12.30 per share shown in the table above, assuming all of our common stock in the aggregate amount of approximately $20,000,000 is sold at that price, would decrease the dilution in net tangible book value per share to new investors in this offering to $7.32 per share, after deducting commissions and estimated offering expenses payable by us. This information is supplied for illustrative purposes only.

The above discussion and table are based on 9,831,169 shares of our common stock issued and outstanding as of March 31, 2015, which does not include the following, all as of March 31, 2015:

- 1,888,375 shares issuable upon the exercise of outstanding stock options with a weighted-average exercise price of $10.50 per share;
- 1,136,078 shares issuable upon the exercise of outstanding warrants with a weighted-average exercise price of $13.47 per share;
- 323,267 shares available for future issuance under the 2011 Equity Incentive Plan, or the 2011 Plan, and the 2008 Stock Option Plan, or 2008 Plan; and

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650,000 shares that became available for future issuance under the 2011 Plan upon approval by our stockholders on May 14, 2015 at our annual meeting.

The above illustration of dilution per share to investors participating in this offering assumes no exercise of outstanding options to purchase our common stock or outstanding warrants to purchase shares of our common stock, and further assumes no issuance of shares available for future issuance under our equity incentive plans. To the extent that any of these outstanding options or warrants are exercised or we issue additional shares under our equity incentive plans, there will be further dilution to new investors. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that additional capital is raised through the sale of equity or convertible securities, the issuance of these securities could result in further dilution to our stockholders.

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MARKET PRICE FOR OUR COMMON STOCK

Prior to our initial public offering on April 4, 2013, no public trades occurred in our common stock. From our initial public offering until August 13, 2013, our common stock was quoted on the OTCQB under the symbol "CGIX," and since August 14, 2013, our common stock has been listed on The NASDAQ Capital Market under the symbol "CGIX." The following table sets forth, for the periods indicated, the reported high and low bid quotations per share for our common stock based on information provided by the OTC Market Group, Inc. and our high and low sales prices on The NASDAQ Capital Market. Such OTCQB over-the-counter market quotations reflect inter-dealer prices, without markup, markdown or commissions and, particularly because our common stock is traded infrequently, may not necessarily represent actual transactions or a liquid trading market.

	High	Low
Fiscal 2013		
Second Quarter (beginning April 5, 2013, the first trading day after our initial public offering)	$ 17.00	$ 7.00
Third Quarter	$ 23.25	$ 8.58
Fourth Quarter	$ 22.59	$ 11.00
Fiscal 2014		
First Quarter	$ 20.95	$ 13.31
Second Quarter	$ 16.88	$ 8.48
Third Quarter	$ 11.50	$ 8.25
Fourth Quarter	$ 9.08	$ 4.83
Fiscal 2015		
First Quarter	$ 9.76	$ 6.55
Second Quarter	$ 12.22	$ 7.57
Third Quarter (through July 14, 2015)	$ 12.50	$ 11.00

On July 14, 2015, the closing sales price of our common stock on The NASDAQ Capital Market was $12.30 per share. As of June 30, 2015, we had approximately 68 stockholders of record. The number of record holders was determined from the records of our transfer agent and does not include beneficial owners of common stock whose shares are held in the names of various security brokers, dealers, and registered clearing agencies. The transfer agent of our common stock is Continental Stock Transfer & Trust, 17 Battery Place, 8th Floor, New York, New York, 10004.

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PLAN OF DISTRIBUTION

We have entered into a Controlled Equity Offering[SM] sales agreement (the "Sales Agreement") with Cantor Fitzgerald & Co. ("Cantor Fitzgerald"), under which we may issue and sell shares of our common stock having an aggregate gross sales price of up to $20,000,000 from time to time through Cantor Fitzgerald acting as agent. The Sales Agreement has been filed as an exhibit to a Current Report on Form 8-K under the Exchange Act and is incorporated by reference in this prospectus supplement.

Upon delivery of a placement notice and subject to the terms and conditions of the Sales Agreement, Cantor Fitzgerald may sell our common stock by any method permitted by law deemed to be an "at-the-market" offering as defined in Rule 415 promulgated under the Securities Act, including sales made directly on The NASDAQ Capital Market, on any other existing trading market for our common stock or to or through a market maker. Cantor Fitzgerald may also sell our common stock by any other method permitted by law, including in privately negotiated transactions. We may instruct Cantor Fitzgerald not to sell common stock if the sales cannot be effected at or above the price designated by us from time to time. We or Cantor Fitzgerald may suspend the offering of common stock upon notice and subject to other conditions.

We will pay Cantor Fitzgerald commissions, in cash, for its services in acting as agent in the sale of our common stock. Cantor Fitzgerald will be entitled to compensation at a commission rate of 3.0% of the aggregate gross sales price per share sold. Because there is no minimum offering amount required as a condition to close this offering, the actual total public offering amount, commissions and proceeds to us, if any, are not determinable at this time. We have also agreed to reimburse Cantor Fitzgerald for certain specified expenses, including the fees and disbursements of its legal counsel, in an amount not to exceed $50,000. We estimate that the total expenses for the offering payable by us, excluding compensation and reimbursements payable to Cantor Fitzgerald under the terms of the Sales Agreement, will be approximately $350,000.

Settlement for sales of common stock will occur on the third trading day following the date on which any sales are made, or on some other date that is agreed upon by us and Cantor Fitzgerald in connection with a particular transaction, in return for payment of the net proceeds to us. Sales of our common stock as contemplated in this prospectus supplement will be settled through the facilities of The Depository Trust Company or by such other means as we and Cantor Fitzgerald may agree upon. There is no arrangement for funds to be received in an escrow, trust or similar arrangement.

Cantor Fitzgerald will use its commercially reasonable efforts, consistent with its normal trading and sales practices, to solicit offers to purchase the common stock shares under the terms and subject to the conditions set forth in the Sales Agreement. In connection with the sale of the common stock on our behalf, Cantor Fitzgerald will be deemed to be an "underwriter" within the meaning of the Securities Act and the compensation of Cantor Fitzgerald will be deemed to be underwriting commissions or discounts. We have agreed to provide indemnification and contribution to Cantor Fitzgerald against certain civil liabilities, including liabilities under the Securities Act.

The offering of our common stock pursuant to the Sales Agreement will terminate upon the termination of the Sales Agreement as permitted therein. We and Cantor Fitzgerald may each terminate the Sales Agreement at any time upon ten days' prior notice.

Cantor Fitzgerald and its affiliates may in the future provide various investment banking, commercial banking and other financial services for us and our affiliates, for which services they may in the future receive customary fees. To the extent required by Regulation M, Cantor Fitzgerald will not engage in any market making activities involving our common stock while the offering is ongoing under this prospectus supplement.

This prospectus supplement and the accompanying prospectus in electronic format may be made available on a website maintained by Cantor Fitzgerald and Cantor Fitzgerald may distribute this prospectus supplement and the accompanying prospectus electronically.

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LEGAL MATTERS

The validity of the issuance of the securities offered hereby will be passed upon for us by Lowenstein Sandler LLP, Roseland, New Jersey. Cantor Fitzgerald is being represented in connection with this offering by Reed Smith LLP, New York, New York.

EXPERTS

The consolidated financial statements as of and for the year ended December 31, 2014, incorporated in this prospectus by reference from the Company's Annual Report on Form 10-K filed with the SEC on March 16, 2015, have been audited by McGladrey LLP, an independent registered public accounting firm, as stated in their report, which is incorporated herein by reference. Such consolidated financial statements have been so incorporated in reliance upon the report of such firm given upon their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy statements and other information with the SEC. We have also filed a registration statement on Form S-3, including exhibits, under the Securities Act with respect to the securities offered by this prospectus supplement and the accompanying prospectus. This prospectus supplement and the accompanying prospectus are a part of the registration statement but do not contain all of the information included in the registration statement or the exhibits. You may read and copy the registration statement and any other document that we file at the SEC's public reference room at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. You can call the SEC at 1-800-SEC-0330 for further information on the operation of the public reference room. You can also find our public filings with the SEC on the Internet at a web site maintained by the SEC located at *http://www.sec.gov*.

INCORPORATION OF DOCUMENTS BY REFERENCE

The SEC allows us to "incorporate by reference" into this prospectus supplement and the accompanying prospectus certain information. This means that we can disclose important information to you by referring you to those documents that contain the information. The information we incorporate by reference is considered a part of this prospectus supplement and the accompanying prospectus, and later information we file with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below and any future filings we make with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Exchange Act, on or after the date of this prospectus supplement (other than information "furnished" under Items 2.02 or 7.01 (or corresponding information furnished under Item 9.01 or included as an exhibit) of any Current Report on Form 8-K or otherwise "furnished" to the SEC, unless otherwise stated) until this offering is completed:

Our Annual Report on Form 10-K for the fiscal year ended December 31, 2014, filed on March 16, 2015;

Our Quarterly Report on Form 10-Q for the period ended March 31, 2015, filed on May 11, 2015;

Our Current Reports on Form 8-K filed on May 15, 2015, July 7, 2015 and July 16, 2015 (other than information "furnished" under Items 2.02 or 7.01 (or corresponding information furnished under Item 9.01 or included as an exhibit));

Our Definitive Proxy Statement on Schedule 14A, filed with the SEC on April 14, 2015 (other than the portions thereof which are furnished and not filed); and

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Description of our common stock contained in the Registration Statement on Form 8-A, declared effective on August 12, 2013 (including any amendment or report filed with the SEC for the purpose of updating such description).

You may request a copy of these filings, at no cost, by writing to or telephoning us at the following address:

Cancer Genetics, Inc.
201 Route 17 North, 2nd Floor
Rutherford, NJ 07070
(201) 528-9200
Attention: Edward J. Sitar, Secretary

Any statement contained in this prospectus supplement or in a document incorporated or deemed to be incorporated by reference into this prospectus supplement will be deemed to be modified or superseded for purposes of this prospectus supplement to the extent that a statement contained in this prospectus supplement or any other subsequently filed document that is deemed to be incorporated by reference into this prospectus supplement modifies or supersedes the statement. Any statement so modified or superseded will not be deemed, except as so modified or superseded, to constitute a part of this prospectus supplement.

You should rely only on information contained in, or incorporated by reference into, this prospectus supplement and the accompanying prospectus. We have not authorized anyone to provide you with information different from that contained in this prospectus supplement and the accompanying prospectus or incorporated by reference in this prospectus supplement and the accompanying prospectus. We are not making offers to sell the securities in any jurisdiction in which such an offer or solicitation is not authorized or in which the person making such offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make such offer or solicitation.

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PROSPECTUS

$100,000,000

CANCER GENETICS, INC.

Common Stock
Preferred Stock
Warrants
Units

We may from time to time offer and sell common stock, preferred stock, warrants and units, having an aggregate offering price of up to $100,000,000. We may offer and sell these securities separately or together in any combination. We may offer and sell these securities to or through underwriters, directly to investors or through agents. We will specify the terms of the securities, and the names of any underwriters or agents and their respective compensation, in supplements to this prospectus.

Our common stock is listed on the on The NASDAQ Capital Market and traded under the symbol "CGIX." The last reported sales price of our common stock on The NASDAQ Capital Market on May 28, 2014 was $11.68 per share.

Investing in our securities involves risks. See "Risk Factors" at page 3 of this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the accuracy or adequacy of this prospectus. Any representation to the contrary is a criminal offense.

This prospectus may not be used to consummate sales of securities unless it is accompanied by a prospectus supplement.

The date of this prospectus is June 5, 2014.

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No dealer, salesperson or other person has been authorized to give any information or to make any representations other than those contained or incorporated by reference in this prospectus or any accompanying prospectus supplement in connection with the offer made by this prospectus or any accompanying prospectus supplement and, if given or made, such information or representations must not be relied upon as having been authorized by Cancer Genetics, Inc. or any such person. Neither the delivery of this prospectus or any accompanying prospectus supplement nor any sale made hereunder and thereunder shall under any circumstances create an implication that there has been no change in the affairs of Cancer Genetics, Inc. since the date hereof. This prospectus or any accompanying prospectus supplement does not constitute an offer or solicitation by anyone in any state in which such offer or solicitation is not authorized or in which the person making such offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make such offer or solicitation.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission, or the SEC, using a "shelf" registration process. Under this shelf process, we may sell any combination of the securities described in this prospectus in one or more offerings up to a total dollar amount of $100,000,000. We have provided to you in this prospectus a general description of the securities we may offer. Each time we sell securities under this shelf registration process, we will provide a prospectus supplement that will contain specific information about the terms of the offering. We may also add, update or change in the prospectus supplement or any "free writing prospectus" we may authorize to be delivered to you any of the information contained in this prospectus. To the extent there is a conflict between the information contained in this prospectus and the prospectus supplement or any free writing prospectus we may authorize to be delivered to you, you should rely on the information in the prospectus supplement or free writing prospectus, as the case may be, provided that if any statement in one of these documents is inconsistent with a statement in another document having a later date for example, a document incorporated by reference in this prospectus or any prospectus supplement the statement in the document having the later date modifies or supersedes the earlier statement. This prospectus, together with the applicable prospectus supplements and any free writing prospectus we may authorize to be delivered to you, includes all material information relating to this offering.

An investment in our securities involves certain risks that should be carefully considered by prospective investors. See "Risk Factors."

You should read this prospectus and any prospectus supplement as well as additional information described under "Incorporation of Certain Documents by Reference" and "Where You Can Find More Information" on pages 14 and 15, respectively.

ABOUT CANCER GENETICS

Overview

Cancer Genetics, Inc. ("we", "CGI", or the "Company") is an early-stage diagnostics company focused on developing and commercializing proprietary genomic tests and services to improve and personalize the diagnosis, prognosis and response to treatment (theranosis) of cancer. Our proprietary tests target cancers that are difficult to prognose and predict treatment outcomes by using currently available mainstream techniques. These cancers include hematological, urogenital and HPV-associated cancers. We provide our proprietary tests and services, along with a comprehensive range of non-proprietary oncology-focused tests and laboratory services, to oncologists and pathologists at hospitals, cancer centers, and physician offices, as well as biotech and pharmaceutical companies to support their clinical trials. To date, we have generated most of our revenue through sales of our non-proprietary testing services to oncologists, pathologists and community hospitals located mostly in the eastern and mid-western United States, as well as to biopharmaceutical companies and clinical research organizations for their clinical trials. In the fourth quarter of 2013, we have begun to expand our geographic reach into the western and southern United States. Our non-proprietary laboratory testing services include molecular testing, sequencing mutational analysis, flow cytometry testing, histology testing and cytology testing. We are currently offering our tests and laboratory services from our 17,936 square foot state-of-the-art laboratory located in Rutherford, New Jersey, which has been accredited by the College of American Pathologists, which is an approved accreditation method under the Clinical Laboratory Improvement Amendments of 1988 ("CLIA"), to perform high complexity testing. CLIA certification and accreditation are required before any laboratory, including ours, may perform testing on human specimens for the purpose of obtaining information for the diagnosis, prevention, treatment of disease, or impairment of, or assessment of health.

Our proprietary tests are based principally on our expertise in specific cancer types, test development methodologies and proprietary algorithms correlating genetic events with disease specific information. During the first quarter of 2011, we commercially launched MatBA®-CLL, our first proprietary microarray test for chronic lymphocytic leukemia ("CLL"). In January 2012, we received

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CLIA approval for MatBA®-SLL, our proprietary microarray for risk stratification in small lymphocytic lymphoma ("SLL"), and we are currently offering MatBA®-SLL in our laboratory. In 2013, we received CLIA approval for MatBA®-DLBCL and MatBA®-MCL, our proprietary microarrays for diagnosis, prognosis and patient monitoring in diffuse large-B-cell lymphoma ("DLBCL") and mantle cell lymphoma ("MCL") respectivel, for UroGenRA -Kidney, our proprietary microarray for patient management and treatment decision-making in kidney cancer, as well as for FHACT , our proprietary FISH-based HPV-associated cancer test for screening of women with HPV-positive abnormal cervical lesions. In addition, we are developing a series of other proprietary genomic tests in our core oncology markets.

We have established collaborative relationships with key thought leaders in oncology, which enable us to develop and validate the effectiveness and utility of our tests in a clinical setting and which provide us access to clinically robust patient data. For example, we formed the joint venture "OncoSpire Genomics LLC" in 2013 with Mayo Foundation for Medical Education and Research ("Mayo") which will focus on developing oncology diagnostic services and tests utilizing next-generation sequencing. We are a 50% owner of the joint venture, contributing capital, commercial experience and other guidance, while Mayo will contribute laboratory resources, research expertise and other operational resources.

The non-proprietary testing services we offer are focused in part on specific oncology categories where we are developing our proprietary arrays and probe panels. We believe that there is significant synergy in developing and marketing a complete set of tests and services that are disease-focused and delivering those tests and services in a comprehensive manner to help with treatment decisions. The insight that we develop in delivering the non-proprietary services are often leveraged in the development of our proprietary programs and now increasingly in the validation of our proprietary programs (such as MatBA®) for clinical use.

We currently offer our proprietary tests as laboratory-developed tests ("LDTs") in conjunction with our comprehensive panel of laboratory services in our CLIA-accredited laboratory. Our current laboratory services include:

Proprietary Oncology Testing Services. These services are based on our proprietary microarray tests and are currently available only in our clinical laboratory. After completing the testing, we provide our customers with a comprehensive analysis of all tests performed for a specific patient, designed to help the physician make an informed and definitive diagnosis and guide the treatment of the patient. We are now in the process of migrating and validating microarray tests to a Next Gen Sequencing-based platform.

Esoteric Oncology Testing Services. We offer a comprehensive suite of esoteric oncology testing services for hematological, urogenital and HPV-associated cancers, including conventional and molecular cytogenetic techniques such as Next Gen Sequencing, G-banding and FISH, mutation and sequencing analysis, flow-cytometry and immunohistochemistry ("IHC").

Clinical Trial Services. We also utilize our clinical laboratory to provide clinical trial services to biopharmaceutical and biotech companies and clinical research organizations to improve the efficiency and economic viability of clinical trials. Our clinical trials services leverage our knowledge of clinical oncology and molecular diagnostics and our laboratory's fully integrated capabilities. We launched our Select One TM program, integrating genomic information into the drug discovery process in order to provide customized solutions for patient stratification and treatment. By utilizing biomarkers, we intend to optimize the clinical trial patient selection. This may result in an improved success rate of the clinical trial and may eventually help biopharmaceutical companies to select patients that are most likely to benefit from a therapy based on their genetic profile.

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We believe that we can be successful by offering cancer professionals a fully-integrated menu of oncology-focused proprietary tests and customized laboratory services. Based on our discussions with leading researchers in the oncology field and our interactions with our collaborators, as well as information we learn through performing the non-proprietary genetic diagnostic testing services, which are focused on the specific oncology categories where we are developing our proprietary tests we provide to our customers, we believe that our proprietary tests provide superior diagnostic and prognostic values than currently available tests and services. In particular, our proprietary tests deliver a level of genomic information not provided by other currently available tests. We believe our ability to rapidly translate research insights about the genetics and molecular mechanisms of cancer into the clinical setting will improve patient treatment and management and that this approach can become a key component in the standard of care for personalized cancer treatment.

Cancer Genetics Corporate Information

Our principal executive offices are located at 201 Route 17 North, 2nd Floor, Rutherford, New Jersey 07070, and our telephone number is (201) 528-9200. Our common stock is currently traded on The NASDAQ Capital Market under the symbol "CGIX." We maintain a corporate website at *www.cancer genetics.com*. The contents of our website are not incorporated by reference into this prospectus and should not be considered to be a part of this prospectus or relied upon in connection herewith.

Cancer Genetics, Inc. was incorporated under the laws of the State of Delaware in April 1999. Unless otherwise stated, all references to "us," "our," "Cancer Genetics," "we," the "Company" and similar designations refer to Cancer Genetics, Inc.

This prospectus and the information incorporated by reference include trademarks, service marks and trade names owned by us or other companies. All trademarks, service marks and trade names included or incorporated by reference into this prospectus are the property of their respective owners.

RISK FACTORS

Investing in our securities involves significant risks. Before making an investment decision, you should carefully consider the risks and other information we include or incorporate by reference in this prospectus and any prospectus supplement. In particular, you should consider the risk factors under the heading "Risk Factors" included in our most recent Annual Report on Form 10-K, as may be revised or supplemented by our subsequent Quarterly Reports on Form 10-Q or Current Reports on Form 8-K, each of which are on file with the SEC and are incorporated herein by reference, and which may be amended, supplemented or superseded from time to time by other reports we file with the SEC in the future. The risks and uncertainties we have described are not the only ones facing our company. Additional risks and uncertainties not currently known to us or that we currently deem immaterial may also affect our business operations. Additional risk factors may be included in a prospectus supplement relating to a particular offering of securities. Our business, financial condition or results of operations could be materially adversely affected by any of these risks. The trading price of our securities could decline due to any of these risks, and you may lose all or part of your investment. This prospectus is qualified in its entirety by these risk factors.

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SPECIAL NOTE REGARDING FORWARD-LOOKING INFORMATION

This prospectus, any prospectus supplement and the documents we incorporate by reference in this prospectus contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). All statements, other than statements of historical facts, that we include in this prospectus, any prospectus supplement, and in the documents we incorporate by reference in this prospectus, may be deemed forward-looking statements for purposes of the Securities Act and the Exchange Act. We use the words "anticipate," "believe," "estimate," "expect," "intend," "may," "plan," "project," "will," "would" and similar expressions to identify forward-looking statements, although not all forward-looking statements contain these identifying words. We cannot guarantee that we actually will achieve the plans, intentions or expectations disclosed in our forward-looking statements and, accordingly, you should not place undue reliance on our forward-looking statements. There are a number of important factors that could cause actual results or events to differ materially from the forward-looking statements that we make, including the factors included in the documents we incorporate by reference in this prospectus. You should read these factors and the other cautionary statements made in the documents we incorporate by reference as being applicable to all related forward-looking statements wherever they appear in this prospectus, any prospectus supplement, and any document incorporated by reference. We caution you that we do not undertake any obligation to update forward-looking statements made by us.

USE OF PROCEEDS

Unless otherwise provided in the applicable prospectus supplement, we intend to use the net proceeds from the sale of the securities under this prospectus for working capital, including expanding our sales and marketing activities, research and development of our proprietary genomic-based diagnostic tests, potential regulatory submissions, potential collaborations, strategic transactions and other general corporate purposes. We will set forth in the prospectus supplement our intended use for the net proceeds received from the sale of any securities. Pending the use of the net proceeds, we may use the net proceeds to invest in investment-grade, interest-bearing securities.

DESCRIPTIONS OF THE SECURITIES WE MAY OFFER

The descriptions of the securities contained in this prospectus, together with the applicable prospectus supplements, summarize all the material terms and provisions of the various types of securities that we may offer. We will describe in the applicable prospectus supplement relating to any securities the particular terms of the securities offered by that prospectus supplement. If we indicate in the applicable prospectus supplement, the terms of the securities may differ from the terms we have summarized below. We will also include in the prospectus supplement information, where applicable, about material United States federal income tax considerations relating to the securities, and the securities exchange, if any, on which the securities will be listed.

We may sell from time to time, in one or more offerings:

- common stock;
- preferred stock;
- warrants to purchase any of the securities listed above; and
- units consisting of any combination of the securities listed above.

In this prospectus, we refer to the common stock, preferred stock, warrants and units collectively as "securities." The total dollar amount of all securities that we may sell will not exceed $100,000,000.

This prospectus may not be used to consummate a sale of securities unless it is accompanied by a prospectus supplement.

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DESCRIPTION OF COMMON STOCK

Our third amended and restated certificate of incorporation authorizes us to issue up to 100,000,000 shares of common stock, par value $0.0001 per share. As of March 31, 2014, there were 9,282,610 shares of common stock outstanding. All outstanding shares of our common stock are fully paid and non-assessable.

The holders of our common stock are entitled to the following rights:

Voting Rights

Holders of our common stock are entitled to one vote per share in the election of directors and on all other matters on which stockholders are entitled or permitted to vote. Holders of our common stock are not entitled to cumulative voting rights.

Dividend Rights

Subject to the terms of any outstanding series of preferred stock, the holders of our common stock are entitled to dividends in the amounts and at times as may be declared by the board of directors out of funds legally available therefor.

Liquidation Rights

Upon liquidation or dissolution, holders of our common stock are entitled to share ratably in all net assets available for distribution to stockholders after we have paid, or provided for payment of, all of our debts and liabilities, and after payment of any liquidation preferences to holders of our preferred stock.

Other Matters

Holders of our common stock have no redemption, conversion or preemptive rights. There are no sinking fund provisions applicable to our common stock. The rights, preferences and privileges of the holders of our common stock are subject to the rights of the holders of shares of any series of preferred stock that we may issue in the future.

Anti-Takeover Provisions

Our third amended and restated certificate of incorporation and bylaws contain some provisions that could make our acquisition by means of a tender or exchange offer, a proxy contest or otherwise more difficult. These provisions are summarized below.

Potential Effects of Authorized but Unissued Shares of Common Stock and Preferred Stock. We have shares of common stock and preferred stock available for future issuance without stockholder approval. We may utilize these additional shares for a variety of corporate purposes, including future public offerings to raise additional capital, to facilitate corporate acquisitions or payment as a dividend on the capital stock. The existence of unissued and unreserved common stock and preferred stock may enable our board of directors to issue shares to persons friendly to current management or to issue preferred stock with terms that could render more difficult or discourage a third-party attempt to obtain control of us by means of a merger, tender offer, proxy contest or otherwise, thereby protecting the continuity of our management.

Special Meetings. Stockholders cannot call special meetings of our stockholders. Our bylaws provide that special meetings of our stockholders may, unless otherwise prescribed by law, be called by our chairman of the board (if any), our board of directors or our chief executive officer and shall be held at such place, on such date and at such time as shall be fixed by our board of directors or the

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person calling the meeting. Business transacted at any special meeting shall be limited to matters relating to the purpose or purposes stated in the notice of the meeting.

Undesignated Preferred Stock. The ability to authorize undesignated preferred stock makes it possible for our board of directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to acquire us. The ability to issue preferred stock may have the effect of deferring hostile takeovers or delaying changes in control or management of our company.

Delaware Anti-Takeover Statute. We are subject to the provisions of Section 203 of the Delaware General Corporation Law regulating corporate takeovers. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a business combination with an interested stockholder for a period of three years following the date the person became an interested stockholder unless:

prior to the date of the transaction, the board of directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;

upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the number of shares outstanding (1) shares owned by persons who are directors and also officers and (2) shares owned by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; and

on or subsequent to the date of the transaction, the business combination is approved by the board and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66 2/3% of the outstanding voting stock which is not owned by the interested stockholder.

Generally, a business combination includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. An interested stockholder is a person who, together with affiliates and associates, owns or, within three years prior to the determination of interested stockholder status, owned 15% or more of a corporation's outstanding voting securities. We expect the existence of this provision to have an anti-takeover effect with respect to transactions our board of directors does not approve in advance. We also anticipate that Section 203 may discourage attempted acquisitions that might result in a premium over the market price for the shares of our common stock held by stockholders.

The provisions of Delaware law, our third amended and restated certificate of incorporation and our bylaws could have the effect of discouraging others from attempting hostile takeovers and, as a consequence, they may also inhibit temporary fluctuations in the market price of our common stock that often result from actual or rumored hostile takeover attempts. These provisions may also have the effect of preventing changes in our management. It is possible that these provisions could make it more difficult to accomplish transactions that stockholders may otherwise deem to be in their best interests.

Transfer Agent

The transfer agent and registrar for our common stock is Continental Stock Transfer & Trust Company. Its address is 17 Battery Place, New York, New York, 10004 and its telephone number is (212) 509-4000.

NASDAQ Listing

Our common stock is traded on The NASDAQ Capital Market under the symbol "CGIX."

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DESCRIPTION OF PREFERRED STOCK

Our third amended and restated certificate of incorporation authorizes us to issue up to 9,764,000 shares of preferred stock, par value $0.0001 per share. At March 31, 2014, there were no shares of preferred stock outstanding.

Terms of the Preferred Stock That We May Offer and Sell to You

We summarize below some of the provisions that will apply to the preferred stock that we may offer to you unless the applicable prospectus supplement provides otherwise. This summary may not contain all information that is important to you. You should read the prospectus supplement, which will contain additional information and which may update or change some of the information below. Prior to the issuance of a new series of preferred stock, we will further amend our third amended and restated certificate of incorporation designating the stock of that series and the terms of that series. We will file a copy of the certificate of designation that contains the terms of each new series of preferred stock with the SEC each time we issue a new series of preferred stock. Each certificate of designation will establish the number of shares included in a designated series and fix the designation, powers, privileges, preferences and rights of the shares of each series as well as any applicable qualifications, limitations or restrictions. You should refer to the applicable certificate of designation as well as our third amended and restated certificate of incorporation before deciding to buy shares of our preferred stock as described in the applicable prospectus supplement.

Our board of directors has the authority, without further action by the stockholders, to issue preferred stock in one or more series and to fix the number of shares, dividend rights, conversion rights, voting rights, redemption rights, liquidation preferences, sinking funds, and any other rights, preferences, privileges and restrictions applicable to each such series of preferred stock.

The issuance of any preferred stock could adversely affect the rights of the holders of common stock and, therefore, reduce the value of the common stock. The ability of our board of directors to issue preferred stock could discourage, delay or prevent a takeover or other corporate action.

The terms of any particular series of preferred stock will be described in the prospectus supplement relating to that particular series of preferred stock, including, where applicable:

- the designation, stated value and liquidation preference of such preferred stock;
- the number of shares within the series;
- the offering price;
- the dividend rate or rates (or method of calculation), the date or dates from which dividends shall accrue, and whether such dividends shall be cumulative or noncumulative and, if cumulative, the dates from which dividends shall commence to cumulate;
- any redemption or sinking fund provisions;
- the amount that shares of such series shall be entitled to receive in the event of our liquidation, dissolution or winding-up;
- the terms and conditions, if any, on which shares of such series shall be convertible or exchangeable for shares of our stock of any other class or classes, or other series of the same class;
- the voting rights, if any, of shares of such series; the status as to reissuance or sale of shares of such series redeemed, purchased or otherwise reacquired, or surrendered to us on conversion or exchange;

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the conditions and restrictions, if any, on the payment of dividends or on the making of other distributions on, or the purchase, redemption or other acquisition by us or any subsidiary, of the common stock or of any other class of our shares ranking junior to the shares of such series as to dividends or upon liquidation;

the conditions and restrictions, if any, on the creation of indebtedness by us or by any subsidiary, or on the issuance of any additional stock ranking on a parity with or prior to the shares of such series as to dividends or upon liquidation; and

any additional dividend, liquidation, redemption, sinking or retirement fund and other rights, preferences, privileges, limitations and restrictions of such preferred stock.

The description of the terms of a particular series of preferred stock in the applicable prospectus supplement will not be complete. You should refer to the applicable amendment to our third amended and restated certificate of incorporation for complete information regarding a series of preferred stock.

The preferred stock will, when issued against payment of the consideration payable therefor, be fully paid and nonassessable. Unless otherwise specified in the applicable prospectus supplement, each series of preferred stock will, upon issuance, rank senior to the common stock and on a parity in all respects with each other outstanding series of preferred stock. The rights of the holders of our preferred stock will be subordinate to that of our general creditors.

DESCRIPTION OF WARRANTS

The following description, together with the additional information we may include in any applicable prospectus supplements, summarizes the material terms and provisions of the warrants that we may offer under this prospectus and the related warrant agreements and warrant certificates. While the terms summarized below will apply generally to any warrants that we may offer, we will describe the particular terms of any series of warrants in more detail in the applicable prospectus supplement. If we indicate in the prospectus supplement, the terms of any warrants offered under that prospectus supplement may differ from the terms described below. Specific warrant agreements will contain additional important terms and provisions and will be incorporated by reference as an exhibit to the registration statement that includes this prospectus.

General

We may issue warrants for the purchase of common stock or preferred stock in one or more series. We may issue warrants independently or together with common stock or preferred stock, and the warrants may be attached to or separate from these securities.

We will evidence each series of warrants by warrant certificates that we will issue under a separate agreement. We may enter into a warrant agreement with a warrant agent. We will indicate the name and address of the warrant agent in the applicable prospectus supplement relating to a particular series of warrants.

Before exercising their warrants, holders of warrants will not have any of the rights of holders of the securities purchasable upon such exercise, including in the case of warrants to purchase common stock or preferred stock, the right to receive dividends, if any, or, payments upon our liquidation, dissolution or winding up or to exercise voting rights, if any.

Additional Information

We will describe in the applicable prospectus supplement the terms of the series of warrants, including:

the offering price and aggregate number of warrants offered;

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- the currency for which the warrants may be purchased;
- if applicable, the designation and terms of the securities with which the warrants are issued and the number of warrants issued with each such security or each principal amount of such security;
- if applicable, the date on and after which the warrants and the related securities will be separately transferable;
- in the case of warrants to purchase common stock or preferred stock, the number of shares of common stock or preferred stock, as the case may be, purchasable upon the exercise of one warrant and the price at which these shares may be purchased upon such exercise;
- the effect of any merger, consolidation, sale or other disposition of our business on the warrant agreement and the warrants;
- the terms of any rights to redeem or call the warrants;
- any provisions for changes to or adjustments in the exercise price or number of securities issuable upon exercise of the warrants;
- the dates on which the right to exercise the warrants will commence and expire;
- the manner in which the warrant agreement and warrants may be modified;
- a discussion on any material or special United States federal income tax consequences of holding or exercising the warrants;
- the terms of the securities issuable upon exercise of the warrants; and
- any other specific terms, preferences, rights or limitations of or restrictions on the warrants.

Exercise of Warrants

Each warrant will entitle the holder to purchase the securities that we specify in the applicable prospectus supplement at the exercise price that we describe in the applicable prospectus supplement. Unless we otherwise specify in the applicable prospectus supplement, holders of the warrants may exercise the warrants at any time up to 5 p.m., Eastern time, on the expiration date that we set forth in the applicable prospectus supplement. After the close of business on the expiration date, unexercised warrants will become void.

Holders of the warrants may exercise the warrants by delivering the warrant certificate representing the warrants to be exercised together with specified information, and paying the required amount to the warrant agent in immediately available funds, as provided in the applicable prospectus supplement. We will set forth on the reverse side of the warrant certificate and in the applicable prospectus supplement the information that the holder of the warrant will be required to deliver to the warrant agent.

Upon receipt of the required payment and the warrant certificate properly completed and duly executed at the corporate trust office of the warrant agent or any other office indicated in the applicable prospectus supplement, we will issue and deliver the securities purchasable upon such exercise. If fewer than all of the warrants represented by the warrant certificate are exercised, then we will issue a new warrant certificate for the remaining amount of warrants. If we so indicate in the applicable prospectus supplement, holders of the warrants may surrender securities as all or part of the exercise price for warrants.

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Enforceability of Rights by Holders of Warrants

Each warrant agent will act solely as our agent under the applicable warrant agreement and will not assume any obligation or relationship of agency or trust with any holder of any warrant. A single bank or trust company may act as warrant agent for more than one issue of warrants. A warrant agent will have no duty or responsibility in case of any default by us under the applicable warrant agreement or warrant, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a warrant may, without the consent of the related warrant agent or the holder of any other warrant, enforce by appropriate legal action its right to exercise, and receive the securities purchasable upon exercise of, its warrants.

DESCRIPTION OF UNITS

We may issue units comprised of one or more of the other securities described in this prospectus in any combination. Each unit will be issued so that the holder of the unit is also the holder of each security included in the unit. Thus, the holder of a unit will have the rights and obligations of a holder of each included security. The unit agreement under which a unit is issued may provide that the securities included in the unit may not be held or transferred separately, at any time or at any time before a specified date. The applicable prospectus supplement may describe:

- the designation and terms of the units and of the securities comprising the units, including whether and under what circumstances those securities may be held or transferred separately;
- any provisions for the issuance, payment, settlement, transfer or exchange of the units or of the securities comprising the units;
- the terms of the unit agreement governing the units;
- United States federal income tax considerations relevant to the units; and
- whether the units will be issued in fully registered global form.

This summary of certain general terms of units and any summary description of units in the applicable prospectus supplement do not purport to be complete and are qualified in their entirety by reference to all provisions of the applicable unit agreement. The forms of the unit agreements and other documents relating to a particular issue of units will be filed with the SEC each time we issue units, and you should read those documents for provisions that may be important to you.

PLAN OF DISTRIBUTION

We may sell the securities through underwriters or dealers, through agents, or directly to one or more purchasers. The accompanying prospectus supplement will describe the terms of the offering of the securities, including:

- the name or names of any underwriters;
- the purchase price of the securities being offered and the proceeds we will receive from the sale;
- any over-allotment options pursuant to which underwriters may purchase additional securities from us;

any agency fees or underwriting discounts and other items constituting agents' or underwriters' compensation;

any public offering price;

any discounts or concessions allowed or reallowed or paid to dealers; and

any securities exchange or market on which the securities may be listed.

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If underwriters are used in the sale, they will acquire the securities for their own account and may resell the securities from time to time in one or more transactions at a fixed public offering price or at varying prices determined at the time of the sale. The obligations of the underwriters to purchase the securities will be subject to the conditions set forth in the applicable underwriting agreement. We may offer the securities to the public through underwriting syndicates represented by managing underwriters or by underwriters without a syndicate. Subject to certain conditions, the underwriters will be obligated to purchase all the securities offered by the prospectus supplement. We may change from time to time the public offering price and any discounts or concessions allowed or reallowed or paid to dealers. We may use underwriters with whom we have a material relationship. We will describe such relationships in the prospectus supplement naming the underwriter and the nature of any such relationship.

We may engage in "at the market" offerings of our common stock, which are offerings into an existing trading market, at other than a fixed price, on or through the facilities of a national securities exchange or to or through a market maker otherwise than on an exchange.

We may sell securities directly or through agents we designate from time to time. We will name any agent involved in the offering and sale of the securities, and we will describe any commissions we will pay the agent in the prospectus supplement. Unless the prospectus supplement states otherwise, our agent will act on a best efforts basis for the period of its appointment.

We may enter into derivative transactions with third parties, or sell securities not covered by this prospectus to third parties in privately negotiated transactions. If the applicable prospectus supplement indicates, in connection with those derivatives, the third parties may sell securities covered by this prospectus and the applicable prospectus supplement, including short sale transactions. If so, the third party may use securities pledged by us or borrowed from us or others to settle those sales or to close out any related open borrowings of common shares, and may use securities received from us in settlement of those derivatives to close out any related open borrowings of common shares. The third party in such sale transactions will be an underwriter and, if not identified in this prospectus, will be identified in the applicable prospectus supplement or a post-effective amendment to this registration statement.

All securities we offer other than common stock will be new issues of securities with no established trading market. Any underwriters may make a market in these securities, but will not be obligated to do so and may discontinue any market making at any time without notice. We cannot guarantee the liquidity of the trading markets for any securities.

We may provide agents and underwriters with indemnification against civil liabilities related to this offering, including liabilities under the Securities Act, or contribution with respect to payments that the agents or underwriters may make with respect to these liabilities. Agents and underwriters may engage in transactions with, or perform services for, us in the ordinary course of business.

Rules of the Securities and Exchange Commission may limit the ability of any underwriters to bid for or purchase securities before the distribution of the securities is completed. However, underwriters may engage in the following activities in accordance with the rules:

Stabilizing transactions Underwriters may make bids or purchases for the purpose of pegging, fixing or maintaining the price of the shares, so long as stabilizing bids do not exceed a specified maximum.

Over-allotments and syndicate covering transactions Underwriters may sell more shares of our common stock than the number of shares that they have committed to purchase in any underwritten offering. This over-allotment creates a short position for the underwriters. This short position may involve either "covered" short sales or "naked" short sales. Covered short sales are short sales made in an amount not greater than the underwriters' over-allotment option to purchase additional shares in any underwritten offering. The underwriters may close out any

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covered short position either by exercising their over-allotment option or by purchasing shares in the open market. To determine how they will close the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market, as compared to the price at which they may purchase shares through the over-allotment option. Naked short sales are short sales in excess of the over-allotment option. The underwriters must close out any naked position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that, in the open market after pricing, there may be downward pressure on the price of the shares that could adversely affect investors who purchase shares in the offering.

Penalty bids If underwriters purchase shares in the open market in a stabilizing transaction or syndicate covering transaction, they may reclaim a selling concession from other underwriters and selling group members who sold those shares as part of the offering.

Similar to other purchase transactions, an underwriter's purchases to cover the syndicate short sales or to stabilize the market price of our securities may have the effect of raising or maintaining the market price of our securities or preventing or mitigating a decline in the market price of our securities. As a result, the price of the securities may be higher than the price that might otherwise exist in the open market. The imposition of a penalty bid might also have an effect on the price of shares if it discourages resales of the securities.

If commenced, the underwriters may discontinue any of the activities at any time.

In compliance with guidelines of the Financial Industry Regulatory Authority, or FINRA, the maximum consideration or discount to be received by any FINRA member or independent broker dealer may not exceed 8% of the aggregate amount of the securities offered pursuant to this prospectus and any applicable prospectus supplement.

LEGAL MATTERS

The validity of the issuance of the securities offered by this prospectus will be passed upon for us by Lowenstein Sandler LLP, Roseland, New Jersey.

EXPERTS

The consolidated financial statements as of and for the year ended December 31, 2013, incorporated in this prospectus by reference from the Company's Annual Report on Form 10-K filed with the SEC on March 28, 2014, have been audited by McGladrey LLP, an independent registered public accounting firm, as stated in their report, which is incorporated herein by reference. Such consolidated financial statements have been so incorporated in reliance upon the report of such firm given upon their authority as experts in accounting and auditing.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The following documents previously filed by us with the SEC are incorporated in this prospectus by reference:

(a) Our Annual Report on Form 10-K for the fiscal year ended December 31, 2013, filed with the SEC on March 28, 2014.

(b) Our Proxy Statement on Schedule 14A for our 2014 Annual Meeting of Stockholders, filed with the SEC on April 21, 2014.

(c) Our Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2014 filed with the SEC on May 15, 2014.

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(d) Our Current Reports on Form 8-K and amendments thereto, filed with the SEC on January 6, February 21, March 19, April 4, May 15 and May 22, 2014, (excluding any information deemed furnished pursuant to Item 2.02 or Item 7.01 of any such Current Report on Form 8-K).

(e) Description of our common stock contained in the Registration Statement on Form 8-A, declared effective on August 12, 2013 (including any amendment or report filed with the SEC for the purpose of updating such description).

All reports and other documents that we file pursuant to Section 13(a) and 13(c), 14 and 15(d) of the Exchange Act prior to the filing of a post-effective amendment which indicates that all securities offered hereunder have been sold or which deregisters all such securities then remaining unsold shall be deemed to be incorporated by reference in this prospectus and to be a apart hereof from the date of filing of such reports and documents.

We will provide to each person, including any beneficial owner, to whom a prospectus is delivered, copies of these filings, excluding all exhibits unless an exhibit has been specifically incorporated by reference in such filings, at no cost, upon written or oral request made to:

Cancer Genetics, Inc.
201 Route 17 North, 2nd Floor
Rutherford, NJ 07070
(201) 528-9200
Attention: Edward J. Sitar, Secretary

WHERE YOU CAN FIND MORE INFORMATION

We have filed a registration statement on Form S-3 with the Securities and Exchange Commission under the Securities Act of 1933. This prospectus omits some information and exhibits included in the registration statement, copies of which may be obtained upon payment of a fee prescribed by the Commission or may be examined free of charge at the principal office of the SEC in Washington, D.C.

We are subject to the informational requirements of the Securities Exchange Act of 1934 and in accordance therewith file reports, proxy statements and other information with the SEC. The reports, proxy statements and other information filed by us with the SEC can be inspected and copied at the Public Reference Room maintained by the SEC at 100 Fifth Street, N.E., Washington, D.C. 20549. Copies of filings can be obtained from the Public Reference Room maintained by the SEC by calling the SEC at 1-800-SEC-0330. In addition, the Commission maintains a website that contains reports, proxy and informational statements and other information filed electronically with the SEC at *http://www.sec.gov*.

You may request, orally or in writing, a copy of these documents, which will be provided to you at no cost, by contacting Edward J. Sitar, Secretary, Cancer Genetics, Inc., 201 Route 17 North, 2nd Floor, Rutherford, NJ 07070, telephone (201) 528-9200.

You should rely only on the information contained in this prospectus, including information incorporated by reference as described above, or any prospectus supplement that we have specifically referred you to. We have not authorized anyone else to provide you with different information. You should not assume that the information in this prospectus or any prospectus supplement is accurate as of any date other than the date on the front of those documents or that any document incorporated by reference is accurate as of any date other than its filing date. You should not consider this prospectus to be an offer or solicitation relating to the securities in any jurisdiction in which such an offer or solicitation relating to the securities is not authorized. Furthermore, you should not consider this prospectus to be an offer or solicitation relating to the securities if the person making the offer or solicitation is not qualified to do so, or if it is unlawful for you to receive such an offer or solicitation.

CANCER GENETICS, INC.

Up to $20,000,000
Common Stock

PROSPECTUS SUPPLEMENT

July 15, 2015